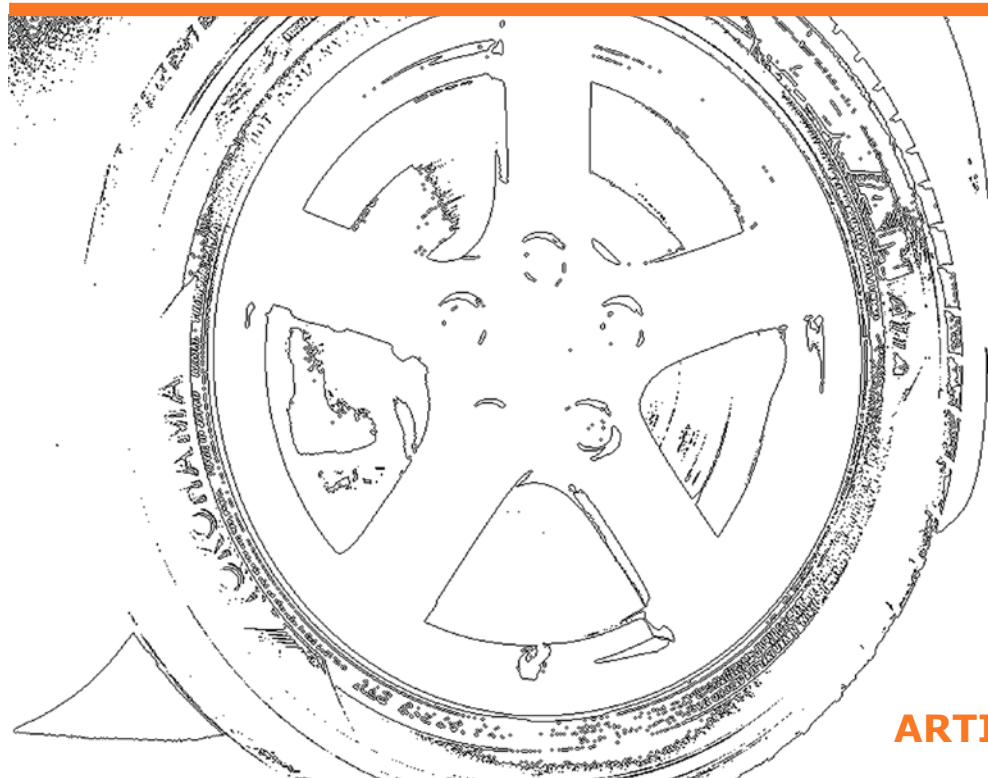


Knowledge

BANK



ARTICLE 18

Hybrid vehicles

Hybrid vehicles

Electric power

The world's oil stocks could be depleted within forty years. Clearly, we need to find other ways to power our mobility than fossil fuels. Electricity could be the answer, so long as it can be produced using renewable energy sources such as wind or wave power.

It used to be that just milk floats were powered by electricity, but car manufacturers have been working for years to produce viable electric-powered cars and several are now available on the market.

The range of such vehicles is an issue; it might be safe to use them in a city, or short trips away from a base, but it is clearly essential to be able to recharge the vehicle before the battery goes flat. Currently there are 1,000 electric-only vehicles registered for the 100% discount under the London congestion scheme. There are 40 free roadside charging points at parking bays across London and the Mayor of London plans to treble this number. Car parks are beginning to install charging points too.

Hybrid petrol/electric

A plug-in-and-drive vehicle is not practical for most fleet drivers but hybrid petrol/electric vehicles offer a good solution. They work by marrying a conventional petrol engine, an electric motor, a lot of batteries and a sophisticated computerised management system to control the process. They don't need to be plugged in to recharge the batteries either.

The Toyota Prius and Honda Insight were the first production cars available in the UK to use this technology. Whilst both cars were hybrids, they worked in different ways.

The Insight used a tiny 1.0-litre petrol engine at all times and the battery provided assistance when needed. Fuel efficiency was excellent; the car could achieve 83mpg.

The Toyota's Prius was slightly different. As the car pulled away from the kerb it was powered by the battery. When the accelerator pedal was pressed more heavily the petrol engine switched in and delivered more power to the wheels. At slow cruising speed the car reverted

Hybrid vehicles

to battery power, and when cruising at high speed it used the petrol engine.

When the Prius's petrol engine was working and spare power was available, this was directed to the batteries and used to charge them. When you took your foot off the accelerator and began to decelerate, the latent power still available in the forward movement of the car was used to charge the batteries. The car needed neither battery nor petrol engine power at that stage.

The best way to describe this is to think of a bicycle with a dynamo lighting system. As you pedal, the movement of the wheels is used to power the lights. As you decelerate, the lights stay on because the wheel is still moving; your leg power is no longer being used but the momentum of the bike is still enough to power the lights. You cannot plug a hybrid car into a wall socket. It gets all of its power from deceleration or the spare power left in the petrol engine as you are driving.

Apart from the technological wizardry that you see on the instrument panel - showing where the power is coming from and going to at any particular moment - hybrid cars behave like normal cars and the driver soon forgets about the technology and just concentrates on driving. Hybrid cars offer high fuel efficiency. In one test, both cars delivered more than 50mpg driving through congested suburban roads in Manchester during the rush hour.

The United States Department of Energy has one of the most useful resource centres on alternative fuels to be found on the web, the Alternative Fuels and Advanced Vehicles Data Center (AFDC). Its website is at <http://www.afdc.energy.gov>.

New hybrid models are being introduced into the market. The Honda Civic Hybrid is a hybrid that looks and behaves very much like a conventional fleet car. Its petrol engine is switched off when the car stops moving and it is started by the electric motor when it's time to move off.

Hybrid cars are exempt from the London Congestion Charge.