

## MOTORING MATTERS *by Sandie Goodwin*

### NEW TECHNOLOGY GOES ON SHOW

Two of the more unusual cars on show at the Geneva motor show were the Moteur Development International (MDI) AIRPod, which runs on compressed air. The other was an electric car, the WILL, a hatchback which features Michelin's new Active Wheel, integrating electric motor, brakes and suspension functions inside the wheel.

While the AIRPOD may not win prizes for sleek good looks, it contains technology that could lead to

a range of zero-emissions vehicles that are not reliant on electricity. This tiny two-seater, with three wheels and a total weight of just 220kg has a range of 180-220km, a top speed of about 40mph and it can be fully recharged in just 90 seconds – the time it takes to refill its carbon-fibre air tank.

MDI has developed another prototype, the OneFlowAir, a small two-seater open-topped four-wheeler that combines the compressed air system

with a conventional motor, creating an air-fuel hybrid system that has up to 100km of zero-emissions autonomy

and an overall range of up to 900km. A six-seater mini-MPV called CityFlowAir could represent a more practical use of the technology.



### WHERE THERE'S A WILL THERE'S A WAY

This neat city car concept hides a secret which could help car manufacturers develop lighter, more compact electric cars. The car is now under test in France. Developed by contract manufacturer Heuliez, who are best known for producing versions of Citroen and Peugeot cars – such as estate derivatives – where volumes are too low to justify full-scale production investment by the automaker. Heuliez's assembly plant in Cerizay, France, has the capacity to produce the car and the company plans to build "several thousand vehicles" a year from 2010.

Inside the wheel there is a small electric motor, an electric suspension system and a brake disc. The WILL has two Active Wheels, driving the front wheels,



but a bigger car, or a performance-oriented vehicle could have four Active Wheels.

French sports car maker Venturi is developing a coupe concept called the Volage, which will have four Active Wheels. There is no need for a gearbox, clutch, transmission shaft, differential or shock absorbers. The wheel also offers the possibility of a totally flat floor, maximising interior space and under-car aerodynamics, and also freeing up space inside

the car for battery packs or fuel cells.

The WILL can seat five, it has luggage space at the front and rear, and the electric drivetrain offers a range of 150km with a lithium-ion battery pack.

### THINK SMART *by Anthony Goodwin*

I have always liked the smart fortwo and the all new version is even smarter! In these times of green credentials the smart continues to be at the top with outstanding fuel consumption and now it's even better with the introduction of their mhd technology. What's mhd I hear you say. Well, it stands for micro hybrid drive, it is an automatic start stop system which is standard on both the 61 and 71 bhp petrol models. This micro hybrid drive system operates when the engine is idling - the engine stops when it senses that the smart's speed drops below 5mph and the driver is braking. When the driver releases the brake pedal the engine is instantly restarted. The start/stop function works together with the smart's automated manual transmission and is completely seamless because of the powerful belt-driven starter generator that replaces both the conventional starter and alternator. If the driver prefers not to use the micro hybrid drive system, it can be deactivated via a switch on the centre console until the next time the car is started.

The mhd is available as a coupe and cabrio in all three trim levels and with a possible 24% increase in fuel savings in city traffic. The new system means a combined 65.7 mpg with Co2 emissions of 103g/km so its £35 a year road tax.

The new shaped smart looks chunkier and with upgraded equipment it still holds its individuality. The re-designed instrument cluster with enhanced LCD display includes an easier to view fuel gauge, permanent digital clock and outside temperature

indicator. You are still able to choose from a wide range of colours with rally red and grey metallic bringing the total number of colour combinations to 12! Standard equipment includes automatic hill start assist, speed sensitive interval wipers, lane change function indicators and remote controlled central locking. A new piece of equipment is the H7 projection headlights which provide brighter and more uniform illumination.

For those of you who are thinking how it can be safe, it's so small, I can tell you about the active and passive safety features of the smart. The tridion safety cell and crash management system works using high strength steel which is reinforced with high strength steel components meaning that in the event of an accident the occupant's space is kept intact. Full-size front airbags, belt force limiters and belt tensioners and a safety steering column which retracts results in an NCAP rating of 4.

In a recent report by an independent consultant it has been found that if more people drove smart, there would be a reduction in traffic congestion. Capita Symonds carried out comprehensive field tests on the effect of driving small cars, like the smart fortwo, on traffic congestion, compared to conventional sized cars. The results showed that three smart fortwo can pass through a set of traffic lights in the same time



as two average sized cars. In the same way as rush hour traffic levels reduce during school holidays, a similar effect could be obtained through the year if there was a significant increase in the proportion of smarts on the road.

There is now even a diesel version of the smart fortwo, this has earned the title of the world's most fuel efficient and lowest Co2 emitting combustion drive production car. The fuel consumption combined is 85.6 mpg with Co2 emissions of 88g/km so its zero rated for road tax. Our test model was the fortwo coupe pure mhd (71bhp) costing £7,294.12 on the road. Options were the smart 10 radio with 6 disc cd changer, luggage compartment cover and lockable glove compartment. One of the best options was the breakdown kit which is stowed in the boot lid! It comprises of an emergency high vis jacket, first-aid kit, warning triangle, a torch, ice scrapper, replacement bulbs and a smart umbrella. The top of the range Brabus Xclusive comes in at £15,635 in cabrio.

