

THE GREEN PACK

If ever there was a topic to make people switch off, it's the environment. It's worthy, but blimey, it can be a bit on the dull side. Mission statements about improvements in energy and waste efficiency, weighty reports on the impact of new regulations, blah, blah, blah.... they're boring, very corporate and, most importantly, the general public doesn't really care about them.

This Green Pack is none of the above. We're Honda and we're different.

Honda is packed with people who care about the cars, motorcycles, engines and the equipment they make. But they're also concerned about the impact those things have on our planet. Don't forget, we're the company who brought you the ultimate in recycling, the edible press pack at the 2005 Frankfurt Motor Show!

You'll probably have noticed that this Green Pack is printed on an unusual material too. That's because it's paper made from recycled elephant dung. That's right - real life elephant poo. It's amazing what you can recycle these days. But please note, although a male elephant may be called a 'Bull', all information in this pack is not to be sniffed at...

So what if we're the world's biggest engine manufacturer? We're also the greenest. And we don't just make clean engines, we make clean engines cleanly. What's more, as you'll soon discover, we've been doing it for years.

This Green Pack is designed to tell you, in plain English, what Honda has done, is doing now and will do in the future to make sure our vehicles are as eco-friendly as they can be. And not just the vehicles themselves, but how we build them. The Green Pack will explain the choices that are currently available to buyers, and offer an insight into how we believe motoring will be in the coming years.

There are people in the world who would like every car to be balanced on its boot, fitted with rockets and shot into space. They're entitled to their opinion but it's not going to happen. Cars are here to stay. The challenge is to create as little impact as possible in production and everyday use.

Past. Present. Future. Honda relishes the challenge.

The Past

We're not going to lecture you about climate change, or how it's a real hot topic on the political agenda. That would be dull and at Honda we don't do dull. You know what it's all about, you understand about rising CO₂ levels, and you know engine manufacturers have a role to play in changing the way we get around the planet. We know that too, but it's not something we've just figured out in the last few years. Honda has been working on this stuff for decades. Way back in 1956, company founder Soichiro Honda said: "After materials are carried into the factory, nothing but products should be carried out."

We believe it's inevitable that eventually, either by genuine wide scale public concern or as a result of legislation, people will want more eco-friendly vehicles.

We also believe that the company who can supply them – yet still make them desirable and affordable – will be best placed to take advantage of that change. We want Honda to be that company.

Honda also believes that practice makes perfect, and that the eco-friendly technology needs researching, developing and most importantly refining until it meets the needs of customers. Sometimes we've gone public with our achievements, sometimes we haven't.

Okay, it's quiz time. Who remembers the British Deputy Prime Minister John Prescott squeezing his ample frame into – and eventually out of – a funny looking futuristic car? The photograph made the front page of every newspaper in the country, and there was blanket TV coverage. That vehicle was a Honda, the Type Dream, and it was the winner of the prestigious World Solar Challenge in 1993. But we weren't content with such an impressive achievement, so we tweaked the technology and repeated the feat in 1996. That's how we do things at Honda.

We've produced with electric cars too. In 1996 we showcased the Honda EV Plus, (pictured on previous page) which was capable of carrying four adults nearly 140 miles on a single battery charge. At the time, that was a staggering achievement.

Gas is another fuel which has been much discussed as a way of making motoring cleaner. By now you're probably getting the picture, so you won't be surprised to learn we've worked on that as well. In 1997 we unveiled the Civic GX, which runs on natural gas and is available to buy in America. The best bit was you didn't have to go and queue up on the forecourt to fill the tank. The

driver can do it outside his own home, using a gas feed from a refuelling system installed in the garage.

The obvious question to ask is why aren't these technologies popular today.? Why aren't we all driving Honda's solar, electric or gas-powered cars? The answer is that they simply weren't good enough or cheap enough to be offered through our dealers or we don't have the proper infrastructure to support them. But none of the research was wasted, and it all led us to one dramatic conclusion. The best medium-term solution to environmentally friendly motoring in the **UK** can be summed up in one word – hybrid.

The Present

'Hybrid' as a word means something of mixed ancestry, and there really couldn't be a better description of Honda's hybrid car technology. Here's our Q&A guide to everything you need to know.

What is a hybrid car?

As the dictionary definition implies, it's one that uses two different types of power (electric and petrol), working perfectly in tandem, to drive the wheels.

When did Honda start developing hybrid cars?

We launched the Insight two-seater coupé in 1999, but obviously development work started long before that. In many ways it was ahead of its time even then; the car was capable of 83mpg on the combined cycle, and emitted just 80g/km of CO₂. To put that into context, most cars today give out more than twice that amount.

Honda's hybrid technology is called IMA. What does that stand for?

IMA is Integrated Motor Assist, and it's called that because the car's integrated electric motor assists the standard petrol engine by giving it a boost during acceleration. Those are the two power sources, the electric motor and the traditional petrol engine.

Presumably the idea is to improve fuel economy?

Yes. The IMA system runs the car at idle, so when a driver stops in traffic the petrol engine cuts out to save fuel. What's more, the battery that's used to power the electric motor actually charges itself using kinetic energy that's created as the car decelerates and brakes. This is called regenerative braking. The end result is a car that behaves like a petrol-powered one, but is better for the environment and gives better fuel economy than an equivalent diesel.

Lots of pros, then. But there must be some cons?

Initially prices of hybrid cars were higher than their standard equivalents, and that was because of the massive investment needed by Honda to develop them. But as time goes on, it's starting to pay off and the cost of ownership, regular car versus hybrid, is tipping in favour of the hybrid customer.

You've recently launched an all-new Civic. Is there a hybrid version?

Yes there is, and as you'd expect it's a giant leap forward from the outgoing model. It has 20 per cent more power, lower CO₂ emissions, better fuel economy and there's a totally new exterior and interior design.

What did the motoring press make of it?

They loved it. As an example, the road testers at Auto Express wrote, “Hybrid engine technology may once have been dismissed as a futuristic fad promoted by manufacturers hungry for a slice of motor show publicity. But the new Civic proves it’s here to stay. The Honda offers more efficiency, a decent amount of power and, crucially, great value for money.”

Can you give us an example of how hybrids can save drivers money?

The new Civic ES CVT Hybrid currently costs £16,300 and offers fuel economy of 61.4mpg. Its nearest standard equivalent is the Civic 5-door 1.8 ES i-shift automated manual, which returns 44.1mpg and costs £16,100. So the non-hybrid car is £200 cheaper in the showroom, but over three years of use, based on 12,000 miles per year and with a petrol price of 90p per litre, the maths makes happy reading for the hybrid customer. He would save close to £1,000 in fuel costs not to mention congestion charge savings and 10% lower insurance.

Will there be more hybrids from Honda?

Absolutely. We expect to increase the range of our cars with hybrid as an option in the future. We in the UK are working with Honda in Japan to ensure those products are focused in line with what our customers want. It’s not just cars, either. The company has also produced a 50cc hybrid scooter prototype, and we’ve even built a hybrid snow-blower.

Are there real alternatives to hybrid cars?

Yes, but at the moment there are more cons for each of them than there are pros. Bio-diesel, a vegetable oil that’s chemically altered so it will burn in an engine, is one. It can be blended with diesel to make the earth’s resources go further, but it’s argued that there’s not enough land devoted to growing the rape seed that it comes from to make it viable on a large scale. A similar process is

used for Ethanol fuel – used widely in Brazil. Honda will introduce a FlexFuel car that accepts ethanol fuel at any percentage by the end of 2006 – but that's not a practical medium term solution for the UK market.

What about LPG and CNG?

Liquefied Petroleum Gas and Compressed Natural Gas are currently available, and used in some production cars from other manufacturers. Each car has two fuel tanks: petrol goes in one and the LPG or CNG goes in the other. They don't work together, you either run the car on petrol or gas. You get low-emissions motoring on the latter but not enough filling stations sell it, which is why there are two tanks. The petrol is there as a back-up for when you run out of the greener fuel. As you can see, it's not a very satisfactory solution.

Is Honda currently working on any of these alternatives?

We are always looking at these alternatives but in the UK the focus is on hybrids. The decades of development work we've put in, stretching back long before the Insight was launched in 1999, means we think they're the best way forward until the long-term solution to greener motoring arrives. We believe that is the hydrogen fuel cell car – but more on that later.

STOP PRESS...STOP PRESS...STOP PRESS...STOP PRESS

Honda is Britain's second most eco-friendly company to work for, according to its employees. It was only beaten by the Royal Society for the Protection of Birds, and given what that organisation's role is, you'd expect it to be very green!

The results came in this year's 'Sunday Times 100 Best Companies to Work For' survey (published 6 March 2006). Honda UK's overall placing was 27th – up from 36th in 2005 – and it was the highest ranked car company. In fact, only

two other automotive firms made the listing, Volkswagen Group UK (66th) and Avis car hire (60th).

The Future

Global car company bosses behind large leather-clad desks, automotive researchers behind protective goggles, or industry watchers and journalists behind computers. You can ask them all the same question about what will ultimately replace petrol and diesel as the way we power our cars, and you will get the same answer. Fuel cells powered by hydrogen.

It's complicated science, but the principle is simple. Think of squeezing hydrogen into a box – or fuel cell – that's already got oxygen in it. The chemical reaction between them produces water, but also electricity. And there's enough of it to power a car. What happens to the water? It comes out of the exhaust and it's clean enough to drink.

As mentioned earlier, Honda has experimented with other motion technologies. But all those projects, including hybrid cars, did convince us that ultimately hydrogen fuel cells were the long-term solution.

The FCX is our experimental fuel cell vehicle. First launched in 1999, it's being refined all the time. But Honda doesn't just put its innovative new technologies through rigorous lab tests – although we do that as well. We also send them out in the real world to see how they perform, and the most amazing trial so far was launched in 2005. Honda created the world's first fuel cell family. Jon and Sandy Spallino plus their two daughters took delivery of a Honda FCX to use for

commuting, shopping and carting the kids about. They agreed to be real-life guinea pigs as part of a two-year study into the everyday usability of a hydrogen powered car. Honda is currently the only manufacturer to certify its fuel cell vehicle for regular daily use, and the first to offer its technology to an individual customer.

So why aren't we all doing what the Spallinos are doing, and driving fuel cell cars? There's a variety of reasons, but it basically comes down to the cost of building them, the lack of a hydrogen infrastructure (ie, somewhere to fill up) and there are still arguments about which of two ways should be the industry standard in making and storing the fuel. Don't worry, Honda's got it covered and is working on all of them.

But one day it will happen, and Honda will be the world leader. Our current domination of the market extends to a fleet of 21 FCX vehicles in regular daily use in America and Japan. The Spallinos may be the first, but they certainly won't be the last. More customers will get the chance to be part of the future soon, and Honda is currently investigating opportunities to bring the technology to Europe.

In the meantime, we're not resting on our laurels in refining the fuel cell technology even further. There's no more prestigious motor show than Tokyo for unveiling pioneering new technology, and at the 2005 event Honda did it again. Building on the innovative Kiwami concept of two years earlier, we unveiled the FCX Concept. A striking saloon with a coupé-like swooping roofline, the next-generation fuel cell is hidden under the floor. It means a low centre of gravity for better handling on the road, and with no engine up front, the design barriers can really be pushed.

At exactly the same time as the Tokyo show was going on, Honda's research and development facility in California, USA, was having a little exhibition of its own. Experts there unveiled the third generation of their Experimental Home Energy Station, a fuel cell-based system developed in conjunction with Plug Power Inc. that produces enough hydrogen to run a car – such as the FCX – and in addition power the average family home. Trials are ongoing, and a MkIV model is on the way.

So just how small will fuel cells go? While other manufacturers are struggling to work out how to get them into cars, Honda is packaging them in a 125cc scooter of the sort that's popular with commuters.

And this isn't some wacky concept; work is going on to make this zero-emissions vehicle a production reality.

Of course, Honda's fuel cell ambitions don't stop here. The FCX, the scooter and the Home Energy Station are just what we've gone public with up to now. The best is yet to come...

P.S. Anymore for anymore. Hungry for more eco inspirations?

Cogeneration system

Honda's compact cogeneration unit is a highly efficient household energy system. It combines the world's smallest natural gas engine with a lightweight power

generation system to achieve an overall energy efficiency of 85 per cent. The cogeneration unit also reduces primary household energy consumption and when used in conjunction with a heating system that uses recovered exhaust heat, it can reduce CO₂ emissions by 30 per cent.

Marine life

In the 1960s, Soichiro Honda made a pioneering decision to only build 4-stroke power equipment engines, including those for marine use. Mr Honda once said: “Because the water raises rice and the fishes live in the water, I don’t want to contaminate it.”

In 1964, Honda produced its first marine engine, the GB30, simultaneously inventing the 4-stroke outboard. In 2004, exactly 40 years later, the rest of the world caught on, with the UK selling more 4-strokes than 2-strokes for the first time – a 52 per cent market share. On mainland Europe the 4-stroke bias was more pronounced at 62.9 per cent and the 4-stroke trend continues worldwide.

Honda’s BF2 is the UK’s best selling 4-stroke engine. It’s also one of the greenest. The BF2.3 has the lowest emissions of any engine in its class and is compliant with the Bodensee Stage 1 marine regulations. Unlike 2-strokes there is no oil or un-burnt fuel in the exhaust so the BF2.3 has minimal impact on the environment.

Low emissions scooter

Like several of Honda’s fuel-injected scooters and motorcycles, the new PS125i/PS150i is equipped with Honda’s oxygen-sensing catalytic emissions system – which means it emits fewer harmful emissions than any other bike in its class. Electronic circuitry built into the fuel injection system’s computer monitors

PGM-FI sensors along with an oxygen sensor installed in the exhaust system to precisely maintain the optimal fuel/air mixture to minimise emissions of carbon monoxide (CO), hydrocarbons (HC) and nitrous oxides (NOX).

SIDE BARS

Big in Japan: Honda's green achievements back home

In 1995, Honda HQ in Japan set itself a target. By 2005 we wanted to cut exhaust emissions of nitrogen oxides and hydrocarbons by 75 per cent. We didn't just meet it, we beat it. By 2003, (with two years to spare) emissions were down 83.7 per cent. But that's not all. In 2000 Honda achieved zero landfill disposal in all its manufacturing plants in Japan. And doing it wasn't rocket science; we just cut down waste and encouraged more recycling. Honda isn't just about building cars, you know; we're also working out how to do it more efficiently and in ways that are better for the environment. For example, by devising a way to get foreign debris out of incineration ash, 2,100 tonnes of the stuff that used to go to landfill is now recycled and turned into cement.

Swindon swings into eco-action Established in Swindon, Wiltshire in 1985, the plant has the capacity to build up to 250,000 cars a year. It's also one of Europe's greenest factories.

- All buildings are coloured to minimise the visual impact and blend with the surroundings.
- The site is surrounded by a series of tree belts. Regular planting takes place to ensure the site has the minimum impact on the landscape.
- A special lighting scheme is in place which a) ensures light is directed away from local communities, and b) at night two out of three perimeter lamps are off.

- Noise testing is regularly carried out to ensure minimum impact on the local community.
- All delivery companies coming to the plant have been asked to ensure their vehicles run on low-sulphur diesel.
- A specially designed trucking schedule has been created to minimise vehicle impact on local roads during peak times.
- Employees are encouraged to car-share to keep traffic levels to and from the plant to a minimum.
- The factory has a target to follow what's happened in Japan, and reduce landfill to zero by 2010. Currently just four per cent of all waste isn't recycled so we're well on target to meet the deadline.
- Honda UK's corporate HQ in Langley, Berks, is getting in on the action, too. It launched The Green Forum, a voluntary organisation of employees who wanted to improve the office's eco-credentials. As a result, all personal waste bins have been removed from under desks and staff now segregate their rubbish into recycling containers. It's led to a 35 per cent cut in waste sent to landfill.
- And don't forget the dealers either. Since September 2005, many have been running a carbon neutral driving scheme. What's that? Every time a customer buys a new Honda car, they receive a month's carbon neutral driving. Here's how it works; if they buy a new Civic 1.8 and do 12,000 miles a year in it, they will produce on average 4.32 tonnes of CO₂ – this is made carbon neutral by planting six trees.