

# hybrid cars

the new drivetrain will further strengthen its credentials.

Toyota works to four-year model cycles for its high-volume models, so given the need to develop an efficient way of fitting the Prius's battery, motor and current inverter into a smaller car, it is unlikely that a production hybrid will be on sale before the next generation Yaris arrives in 2003.

People carriers do not traditionally count fuel efficiency among their virtues—a fact which makes them a natural choice to use hybrid power. The current Previa has been around since 1990 and is due for replacement in 2000. Because packaging the hybrid technology will not be as difficult in a car as large as the Previa, it is thought that the system will be adopted between one year and 18 months after the next Previa is launched.

The last of the three hybrid models will be the Crown. Unlike any of the models that

will precede it, this large saloon is rear-wheel drive, something that causes special problems with hybrid installations. When coasting, friction in the rear axle and prop-

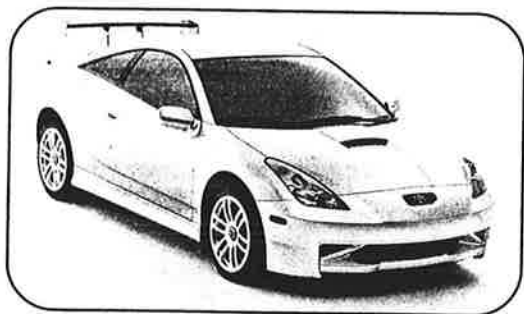


Prius has "core technology"

shaft can soak up 30 per cent of the energy that should be recharging the battery via the gearbox-mounted motor and generator.

Toyota is committed to the project because the Crown is favoured by Japanese government officials who want greener transport, but without giving up their luxury cars. A new Crown is launched in October, but the hybrid won't be launched until the next model arrives in 2004.

## TOYOTA'S HYBRID SPORTS CARS



Prius chief engineer Toshihiro Oi and Toyota's managing director for alternative technology, Hiroyuki Watanabe, are looking to a future where hybrid technology won't just be worthy – it will be fun as well.

Last week *Autocar* revealed Watanabe's dream to campaign a hybrid racer at Le Mans, but Oi's fantasy is a hybrid rear-drive sports car for the road. The most likely candidate is the next-but-one Celica.

While this year's new Celica (based on the XYR concept, above) retains front-wheel drive, the next generation – due in 2005 – may switch to a rear-drive format. To get around the energy loss problems in battery recharge mode, the hybrid could have twin motor/generators in the rear hubs.

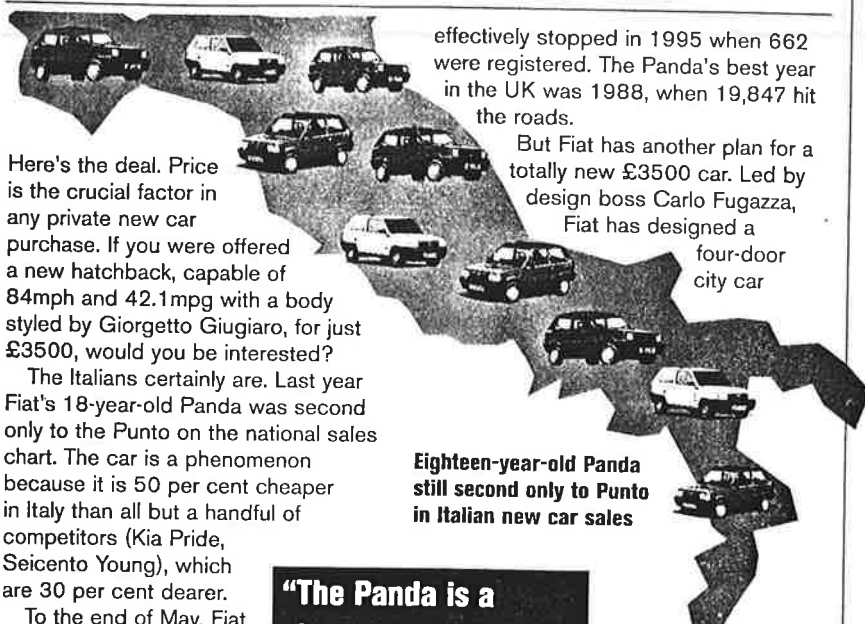


Toshihiro Oi: dreaming of hybrid-powered sports car

## GRAPEVINE



## PETER ROBINSON



Here's the deal. Price is the crucial factor in any private new car purchase. If you were offered a new hatchback, capable of 84mph and 42.1mpg with a body styled by Giorgetto Giugiaro, for just £3500, would you be interested?

The Italians certainly are. Last year Fiat's 18-year-old Panda was second only to the Punto on the national sales chart. The car is a phenomenon because it is 50 per cent cheaper in Italy than all but a handful of competitors (Kia Pride, Seicento Young), which are 30 per cent dearer.

To the end of May, Fiat has produced 76,142 Pandas and sold most of them at home, where it continues to outperform the Seicento, Lancia Ypsilon and rivals from Volkswagen, Daewoo, SEAT and Ford. Sales were given an understandable boost two years ago when the Italian government offered incentives for people to trade in their 10-year-old cars. Because the incentives favoured cheaper cars, Panda production rose from 66,700 in 1996 to 137,000 the following year.

The incentives have gone, but the Panda continues to sell. Fiat talked of killing the model in the second half of the '90s, but customers keep coming back. So far 3,950,000 have been produced. Ironically, while buyers are delighted, there's so little press interest that Fiat doesn't have a Panda on its test fleet in Turin.

The last time Fiat tweaked the Panda was 1991, and today there are just three models: the 0.9-litre Young and Hobby, and the 1.1-litre 4x4. In fact, the Panda is currently the only all-wheel-drive model made by Fiat, Alfa Romeo and Lancia.

Now Fiat is planning to slot a cleaner emissions FIRE engine under the bonnet and reinforce the body structure so that it passes crash tests, in order to relaunch the Panda in 2003. That's when it could make a comeback in the UK, where sales

effectively stopped in 1995 when 662 were registered. The Panda's best year in the UK was 1988, when 19,847 hit the roads.

But Fiat has another plan for a totally new £3500 car. Led by design boss Carlo Fugazza, Fiat has designed a four-door city car

**Eighteen-year-old Panda still second only to Punto in Italian new car sales**

**"The Panda is a phenomenon because it is 50 per cent cheaper than rivals"**

capable of meeting the 3.0 litres per 100km (94.2mpg) fuel consumption standard. The project,

driven by Fiat Auto chief Roberto Testore's goal of producing the car for under 10 million lire (£3390), has involved every area of car development and key suppliers.

Fugazza aims to make it as light as possible using conventional materials. VW's Lupo, the only current production "3.0 litre" car, is priced at Golf levels because it uses so much aluminium and magnesium. VW hopes to sell between 5000 and 10,000 a year, but Fiat's ambitions are 200,000-plus.

The car is intended as a proposal for production, though insiders say the styling will be controversial. Fiat has spent hundreds of hours in the wind tunnel to drop the Cd figure as low as 0.26. Power comes from a FIRE engine, though sources say it's still too heavy.

Fiat intends to show off a concept car at September's Frankfurt Motor Show. Interesting to see if a Panda appears on the same stand.

**£3500**



**Sharp pricing keeps Panda buyers coming back**