



It has been the market-leading hybrid car since its inception back in 1997, and now the Toyota Prius is ready to enter the next stage of its development.

The vehicle, which is sold in more than 70 countries and regions, was the first mass-produced hybrid car and in September last year reached more than two million cumulative sales. Now in its third generation it is ready to expand into an entire family of vehicles as it looks to fend off increased competition and remain the front runner in what is no longer a niche sector.

Here we take a look at the present and future of the Prius.

Third time lucky

The third generation Toyota Prius made its debut at the 2009 North American International Auto Show before going on sale in Japan in May of the same year. Its price was reduced to compete with the Honda Insight and among its features was a more aerodynamic body. It has a fuel efficiency rating on the EPA combined cycle of 50mpg and was deemed the most efficient car available that was powered by liquid fuel in the US in 2009. Its official UK fuel economy data is 72.4mpg on the urban cycle; and 76.4mpg on the extra urban cycle (see article).

It includes a 1.8litre petrol engine that generates 98hp and with the added power of an electric motor it can achieve 134hp. Its larger engine displacement increases torque while reducing engine speeds and increasing fuel economy.

At the heart of its construction is a new range of plant-derived ecological bio-plastics made from cellulose that is derived from wood or grass instead of petroleum. The two principle components are kenaf and ramie (see article).

Plugged into the future

The Toyota Prius Plug-in Hybrid (see article) has been a work in progress since 2009. It is based on a third generation Prius model but includes lithium-ion batteries for an all-electric range of 13miles. It has already been involved in demonstration programmes in Japan, Europe, Canada, China, Australia, New Zealand and the US.

The plug-in model will be capable of speeds up to 62mph and the battery pack can be charged completely in just three hours. It is rated at 134mpg with CO2 emissions of 76g/km.

The commercial version is expected to cost between \$2,000 and \$5,000 more than the regular Prius and retail sales will start in the US during the second quarter of 2012 where it will initially be offered in 15 states: Arizona, California, Connecticut, Hawaii, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Oregon, Rhode Island, Vermont, Virginia and Washington. These are the states in which 60 per cent of existing Prius models are sold.

Family matters

It was at this year's North American International Auto Show, that Toyota announced the 2012 model year Prius V, an extended hatchback wagon derived from the Prius that will offer 50 per cent more interior cargo space than the original design. It is scheduled to be released in the US in mid 2011 and in Europe in mid 2012.

The vehicle actually looks like a European minivan with a 0.29 drag coefficient and a shape evolved from the Prius. Its exterior is expanded with an extended roofline and it has a specially designed roof spoiler that improves air flow. The engine is the same and it will feature a 1.8 litre engine, hybrid synergy drive and the same nickel-hydride battery. Its fuel economy is estimated at 40mpg on the combined cycle and it should produce 66 per cent fewer smog forming emissions than the average new vehicle.

However, the Prius V is only one part of what is actually a new family of vehicles based around the Prius (see article). Also debuting is the Prius Alpha, the Prius + and the Prius C Concept. The Prius + will be broadly the same as the Prius V except it will be the first European hybrid seating seven passengers and will go on sale in the second half of 2012.

The Prius Alpha actually went on sale in Japan last week (see article) and is the basis for both the Prius V and the Prius +. It is available as a five-seat, two-row model and a seven-seat three-row model, with the latter's third row enabled because of a space saving lithium-ion drive battery in the centre console. Finally, the Prius C Concept is a small hybrid petrol electric car with the "c" standing for "city". It is much smaller than a normal Prius and will be aimed at younger drivers that don't need much space.