'Ask Hanip'

Ask Hanip is a monthly automotive advice column by Hanip Abdul who has over 20 years of experience in the automotive industry. Hanip was formerly from Borneo Motors where he started out as an apprentice, eventually progressing to become their diagnostic specialist and, once, a Master Technician for Lexus. He received instructorship training in Japan and was awarded a Champion status twice for the International Toyota Skill Contest. Currently, he runs his own workshop Hanip Automobiles, which have received numerous accolades for excellent service.

Environmental Issues

Dear Hanip, I heard that the new Toyota Prius is powered by Toyota Hybrid Synergy Drive technology. What is the Toyota Hybrid Synergy Drive about and how does it benefit the driver, the vehicle and the environment? Kevin Chong

Hi Kevin, the Hybrid Synergy Drive (HSD) is a combination of an electric drive and a continuously variable transmission. HSD uses what is called a "Series Parallel Hybrid System", which is effectively a combination of the "Series Hybrid System" developed by Toyota and the "Parallel Hybrid System" which has a different approach. This single integrated system is a package that uses an electric motor concurrently with a gas/petrol engine on board the vehicle.

The HSD works by running the car using dual sources of power (electric motors and/or gas/petrol engine) depending on the driving conditions. The gas/petrol engine can be down sized to match only the average load of the car as the main source of power is from the electric motors. At the same time, the generator provides electric power for the electric motors and also recharges the battery. At low speeds, the car can be powered directly by the electric motors and at high speeds, the gas/petrol engine takes over and any additional power can then be fed in by the electric motors. This approach allows the internal combustion engine to be run more efficiently and can even be switched off when stopping at traffic stops.

Coupled with regenerative braking, when the car wants to slow down, the brake pedal engages the generator and converts the forward motion from slowing down into an electric current flow which is used to recharge the batteries.

The general combination of the above technological advances is the HSD that Toyota has developed. Due to the fact that the gas/petrol engine is more of a compliment than the main power catalyst, the driver will save on fuel and is constantly involved in energy saving ways. Toyota Hybrid Synergy Drive thus achieves its aim of providing the best solution for those who want driving pleasure with the lowest impact on environment.