

KERS used in F1 racing

Kinetic Energy Recovery System (KERS) is a very unique and a debated addition to F1 racing. As most people watching F1 have already known that it's sort of a speed boost and gives an increase in the speed for a few moments. It gives a speed boost of exactly 6.6 seconds giving a total of 82hp during that period. So where is the energy to give the boost coming from?

It is coming from the Kinetic Energy lost during the braking of an F1 car. The wasted Kinetic Energy is transferred from the rear end of the wheel to a battery or super-capacitor and when fully charged, can be used for that speed boost.



Flywheel KERS

The KERS is exemplified in complex high end systems such as the ZyteK, Flybrid, Torotrak and Xtrac used in F1. The concept of transferring the vehicle's kinetic energy using Flywheel energy storage was postulated by physicist Richard Feynman in the 1950s. The Xtrac & Flybrid are both licensees of Torotrak's technologies, which employ a small and sophisticated ancillary gearbox incorporating a continuously variable transmission (CVT). The FIA has defined the amount of energy recovery for the 2009 season as 400kJ per lap which translates to 6.6 seconds of 82hp speed boost. The transfer of power to a battery is the electronic KERS system. There is a mechanical KERS system also which uses a flywheel to store the wasted kinetic energy instead of a battery.

Kinetic Energy Recovery Systems (KERS) were used for the motor sport Formula One's 2009 season, and under development for road vehicles. However, KERS has been abandoned for the 2010 Formula One season. The Formula One Teams that used Kinetic Energy Recovery Systems in the 2009 season are Ferrari, Renault, BMW and

McLaren. One of the main reasons that not all cars use KERS is because it adds an extra 25 kilograms of weight, while not adding to the total car weight, it does incur a penalty particularly seen in the qualifying rounds, as it raises the car's center of gravity, and reduces the amount of ballast that is available to balance the car so that it is more predictable when turning. FIA rules also limit the exploitation of the system. Eventually, during the season, Renault and BMW stopped using the system. Williams is developing a flywheel-KERS system. The concept of transferring the vehicle's kinetic energy using Flywheel energy storage was postulated by physicist Richard Feynman in the 1950s and is exemplified in complex high end systems such as the ZyteK, Flybrid, Torotrak and Xtrac used in F1 and simple, easily manufactured and integrated differential based systems such as the Cambridge Passenger/Commercial Vehicle Kinetic Energy Recovery System (CPC-KERS).

Xtrac and Flybrid are both licensees of Torotrak's technologies, which employ a small and sophisticated ancillary gearbox incorporating a continuously variable transmission (CVT). The CPC-KERS is similar as it also forms part of the driveline assembly. However, the whole mechanism including the flywheel sits entirely in the vehicle's hub (looking like a drum brake). In the CPC-KERS, a differential replaces the CVT and transfers torque between the flywheel, drive wheel and road wheel.

Source: <http://electrical-all.blogspot.in/2010/06/kinetic-energy-recovery-system-kers-is.html>