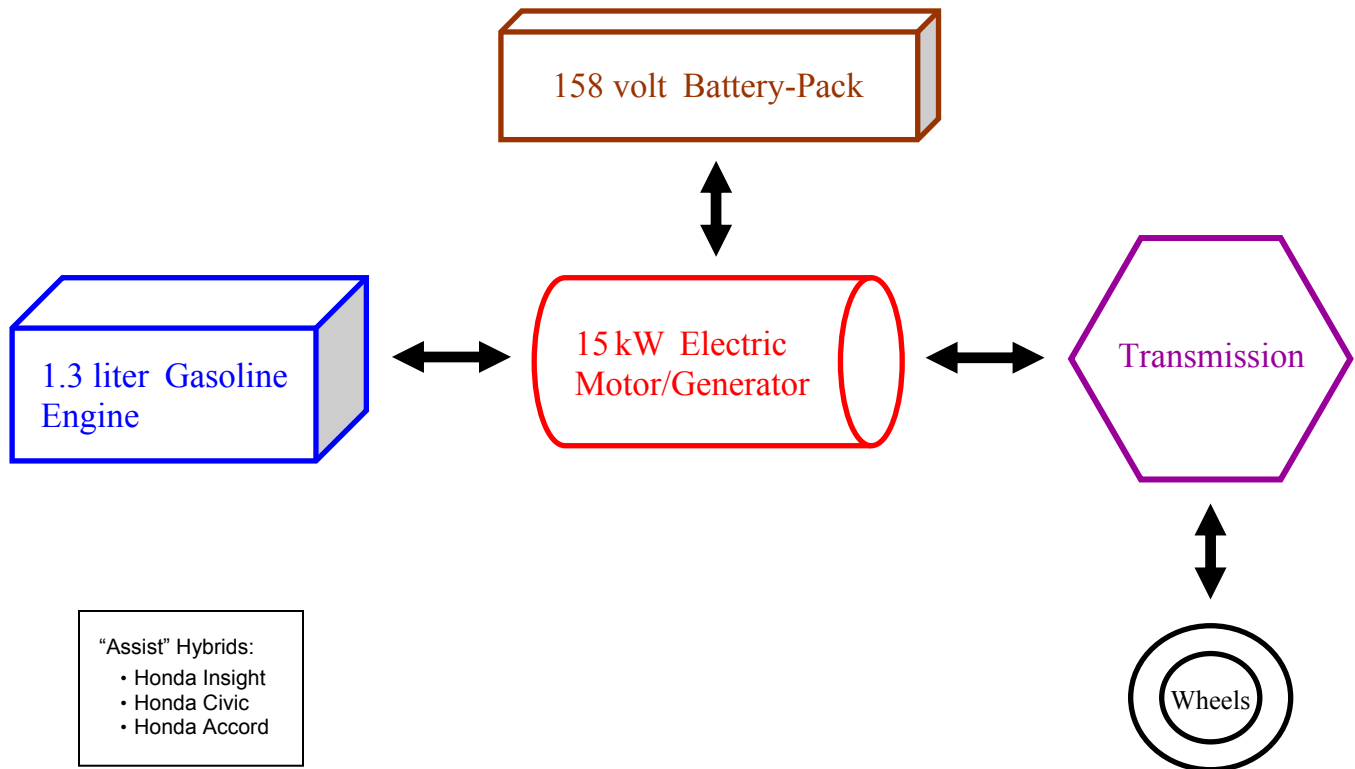


# Assist Hybrid



This type of hybrid design can be described as an “enhanced traditional”.

The enhancement is accomplished by inserting an electric motor between a gasoline engine and a manual, automatic, or CVT (cone & belt type) transmission. By sharing the same connection shaft, the motor is able to seamlessly provide power when the engine is least efficient... which coincidentally is when the motor is most efficient. This offsetting of power is how increased MPG is achieved.

When the engine is running in an efficient manner, power from the motor is not needed. During those times, the motor spins in an inert state and will remain that way until additional power is required or braking begins. Stepping on the brake pedal to decelerate the vehicle will cause the motor to operate as a generator instead. Motion from the wheels is directed to the motor, the reverse of what happens during acceleration. That creates electricity, which is used to recharge the battery-pack.

The direct connection between engine & motor causes both to rotate at the same RPM. That design provides simple integration with the transmission, a benefit. It also means that the motor cannot operate alone, a shortcoming. Electric-Only propulsion requires the engine to continue pumping (but without gas being consumed). The same is also true when generating electricity from braking.

Electricity for the motor is supplied exclusively by the Battery-Pack. Recharging of it primarily occurs from braking and trickling (similar to the way the 12-volt battery in a traditional vehicle is charged). However, if electricity is required sooner, the engine will be run at a higher RPM to make the motor act as generator even though the vehicle is not decelerating. The catch is that the motor cannot both create & consume electricity simultaneously; it must switch between those two roles.

Note: All the values listed in the illustration above are from the 2006 Civic-Hybrid.