The 'right' hybrid car: power conversion

Key components

A small internal combustion engine (in the future, hydrogen-powered), which is in one of four possible states -- off; at minimum RPM's; at maximum torque; at full power -- to ensure autonomy and provide the average power required for the journey: city, road, highway, German motorway; it will be optimized to maximize efficiency, and minimize size, noise and pollution.

One generator / starter motor (synchronous, alternating current, with inverter regulating phase advance / delay), connected to the combustion engine.

Four electric motors equal to the generator on the four axle shafts connected to the four wheels (engines and brake discs are located near the longitudinal axis of the car, away from suspensions); the engines provide power during acceleration and normal driving, collect power when the car slows down, and provide braking as well (if they can speed up the car, they can also slow it down / stop it; the brakes are for emergency only: this is the only way to recover all the energy during slowing down / braking).
Alternatively, engines on the wheel rims (for city cars, ...with reduced power rating), to allow wheels to rotate 90°, in order to park sideways, and/or 45° to make the car rotate on the spot.

Generators and motors with the same rated power of the combustion engine, capable of withstanding a 150-200% overload for short periods; in this way, the wheels will be provided a power 4 times higher than that of the combustion engine, and 6-8 times higher for a short time frame; in practice, with 100 thermal HP, the available power at the wheels will range form 400 to 800 HP (clearly, only 100 HP will be available on average, but they should be enough for normal cruising).

Battery autonomy enough for town use (without having to turn on the combustion engine) and battery peak current enough to withstand the power conversion in sports driving.

Properly dimensioned electronics.

Research / design investments to be made

Combustion engine (hydrogen; low noise, high efficiency, small size, low pollution, ...).

Batteries (weight, cost, ...).

Engines (supermagnets for minimum weight / size; ...).

Electronic controls (coherent integration of differentials, traction control, ABS, stability controls, etc.).

Safety in case of accident (high voltages and gasoline should not get in touch...)

Why not, ...style.