

Powerhouse Capacitors Coming to Electric Cars

Today's hybrid electric cars come with a catch. They rely on an inefficient energy trifecta—battery, gas engine and a capacitor that kicks in for pick-up and to absorb braking power. But Gerhard Welsch, PhD, a materials scientist at Case Western Reserve University Case School of Engineering, plans to reduce the reliance on large batteries with capacitors that juice up electric vehicles—and electronic devices such as computers, cell phones and implantable defibrillators—at a fraction of the size and weight.

The trick is an improved dielectric (the thin barrier that separates the capacitor's positive and negative charges) that uses titanium oxide glass instead of a crystalline form and packs up to 1,000 times the punch of ceramic capacitors.

The goal for the dielectric? "To be as perfect and impermeable as possible," Welsch says. For the inevitable imperfections that do arise, Welsch's capacitors are self-healing, immediately sealing any gaps "like beavers," he says, "that come in during and right after a flood to plug up a hole in the dam."

Welsch predicts a prototype of his petite-yet-potent capacitor will be available for market in the next few years. —TAMAR NORDENBERG

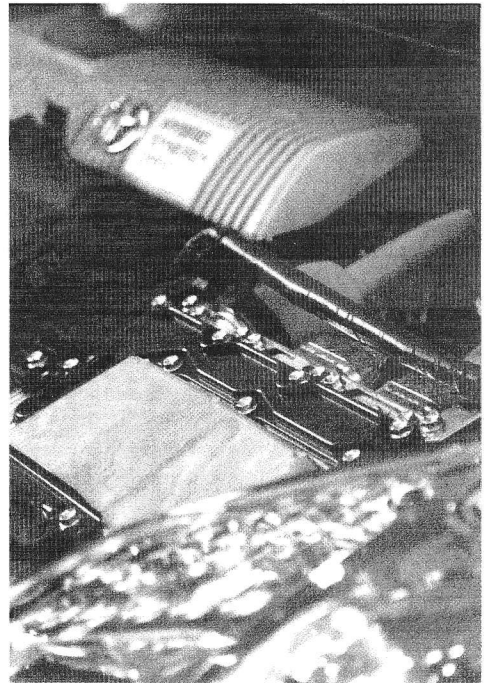


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