

# Japanese researchers develop EV motor not reliant on rare earth metals

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Japanese researchers working out of Tokyo University of Science, have built what they describe as a motor for electric cars that does not require so-called rare earth metals; a move that could drive down the costs for such vehicles.

Rare earth metals are a set of seventeen metals that, despite their name, are not actually rare; instead they are widely dispersed in the Earth's surface, making mining both difficult and expensive. Japan has been particularly sensitive to the use of rare earth metals in electric and hybrid [motor](#) creation, because the country doesn't have a source of such materials of its own, and therefore must import it from other countries, most notably China, which some in Japan have accused of using monopolistic business practices. Thus, researchers in Japan have been hard at work trying to find either a substitute, or a way to make electric motors that don't require the special properties of [rare earth metals](#).

With the new motor, the researchers have opted for the latter and claim the new motor they've created has an output of 50KW and efficiency of more than 95 percent. They are calling it the "Switched Reluctance Motor" because it produces its electric charge by using the difference in magnetic resistance via rotation, when the electricity running through a coil is turned on and off, which means the motor doesn't need a permanent magnet.

The team, led by Associate Professor Nobukazu Hoshi, showed off their new motor (which looks like a big tin box under the hood) that they say

is approximately the same size as the motor used in a Toyota Prius, at the Techno-Frontier 2011 trade show in Tokyo last week.

And while the team does acknowledge that their motor is not able to produce torque equal to current EV motors, and thus is not as energy efficient, they believe further research will lead to breakthroughs that will make it more than competitive in the marketplace. There is also apparently, an issue with noise and vibration, but the team says it's a minor problem that will be easily corrected.

**More information:** [www.youtube.com/watch?v=Cq\\_9EntG35w](http://www.youtube.com/watch?v=Cq_9EntG35w)

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