

# Japan develops vehicle motor free of rare earths

30 September 2010



A Japanese worker assembles a hybrid vehicle. Japanese researchers say they have developed a hybrid vehicle motor that is free of rare earths, the minerals that are now almost exclusively produced by China.

Japanese researchers said Thursday they had developed a hybrid vehicle motor that is free of rare earths, the minerals that are now almost exclusively produced by China.

The news from a state-backed research group and a university comes days after industry sources said [China had temporarily halted](#) crucial rare earth exports to Japan amid a bitter territorial dispute.

Magnets made from rare earths have so far been considered indispensable for motors in gasoline-electric hybrid and [electric vehicles](#) produced by Japanese auto makers such as Toyota, Mitsubishi and Honda.

Japan's New Energy and Industrial Technology Development Organisation (NEDO) and Hokkaido University said they had now developed a motor using magnets which are commonly used in electronics parts.

"As the technology uses only inexpensive ferrite

magnets, it is expected to boost Japan's competitiveness in the development of next-generation automobiles contested more and more fiercely in recent years," they said in a statement.

Kenji Kobayashi, of NEDO, said "ferrite magnets are very cheap as they are mostly iron."

Ferrite magnets are weaker than magnets made from rare earths such as neodymium and dysprosium, which are both imported from China, but sell at only one 20th of their price, he told AFP by telephone.

"Magnets are placed differently in the new [motor](#) so that their attraction power does not escape," Kobayashi said, adding however that it would take years to put the technology to practical use.

**Rare earth minerals**  
Group of 17 elements used in a wide range of consumer products

**Features:**

- ▶ Gray to silvery metals
- ▶ Soft, malleable and ductile
- ▶ China supplies at least 95 percent of world's rare earths

**Some products that contain rare earth elements:**

- iPods**  
dysprosium, neodymium, praseodymium, samarium, terbium
- Wind turbines**  
dysprosium, neodymium, praseodymium, terbium
- Hybrid vehicles**  
dysprosium, lanthanum, neodymium, praseodymium
- Fibre optics**  
erbium, europium, terbium, yttrium
- Energy-efficient fluorescent light bulbs**  
europium, terbium, yttrium

Source: USGS

Fact file on rare earth minerals which are key to the production of many electrical items. Japan is considering stationing troops near islands at the centre of a row with China, a news report said Wednesday, but Beijing's move to ease mineral exports raised hopes for an easing of friction.

More than 90 percent of rare earths worldwide are produced in China.

China's rare earths shipments to Japan were disrupted last week amid a bitter diplomatic spat between the two countries, although [China](#) has moved towards resuming exports, according to industry sources.

Beijing repeatedly denied claims it blocked the shipments of rare earths, which are used in a range of products from consumer electronics to batteries for [hybrid cars](#) and components in wind and solar power.

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