Hitachi unveils motor without 'rare earths'

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The prototype 11 kilowatt motor does not use magnets containing rare earths and is expected to go into commercial production in 2014, the company said.

Hitachi started work on the project on 2008. Other Japanese firms, including automaker Toyota, have been working towards the same goal, spurred on by high prices of the minerals.

Permanent magnet motors usually contain rare earth such as neodymium

and dysprosium and are in increasing demand for the growing number of hybrid and electric vehicles.

Japan has been seeking to reduce its dependence on rare earths and to diversify sourcing to cut its reliance on China, which controls more than 90 percent of global supplies and has moved to restrict production and exports.

Japan was hit when China temporarily cut off exports in 2010 during a territorial row between Asia's two largest economies.

The United States, Japan and the European Union lodged a joint complaint with the World Trade Organization in March, claiming China is unfairly benefiting its own industries by restricting exports of the sought-after minerals.

Rare earths are used to make a wide range of high tech products, including powerful magnets, batteries, LED lights, electric cars, iPods, lasers, wind turbines and missiles.