

Global Minerals restriction

Rare-earth quotas 'are not sinister'

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International turbine makers need not be alarmed by China's cuts to export quotas of rare-earth minerals, according to mining experts.

The minerals are needed to make permanent magnets, which are mainly used in direct-drive turbines. One rare-earth element, neodymium, is a key ingredient in about 5% of direct-drive turbines, and is increasingly being used in other products, including hybrid cars. Turbines can each use up to half a tonne of the metal.

Turbine makers were alarmed when the Chinese restrictions were announced last year, fearing that prices for rare-earth metals would rise.

Fundamentally, the Chinese want value-added downstream products, says Molycorp Minerals' director of magnetic business, Stanley Trout. "It's okay to sell neodymium, but they'd rather sell magnets. That's really their push. Some people have tried to make this seem sinister on the part of Chinese," but he does not see it as malicious.

Nor does William Bird, president and chief executive of Canada's Medallion Resources. He believes that Beijing wants to be sure its own industries have enough minerals.

Trout suspects the Chinese would like to open the taps and supply more minerals, but he does not think they can and, as a result, are lowering quotas.

He says there is a limit to how much material China can process because of unsustainable environmental practices by local miners. China got into the rare-earth business in a big way in the 1990s, extracting the minerals by using acids that pollute rivers and streams. Now that business has grown exponentially, they have not been able to clean up their act sufficiently to expand.

"That puts them in a kind of awkward position," says Trout.

It is hard to change the way things are being done, he adds, as it would involve shutting down all operations to reconfigure before starting up again. "That's very awkward, given the amount of material that's flowing through their system."

Trout also says wind generator designs often overuse magnets. The technology is not standardised, and different producers will use different amounts, "which is telling you they don't

know how to use them yet". The Chinese quota reductions keep domestic prices much lower, and Bird says rare-earth minerals can be sold abroad for double the price.

Neodymium rose from about \$17/kg a year ago to about \$88/kg at the end of 2010 (keeping track of rare-earth prices is not easy, as there is no commodity exchange and prices are not public information). At those prices, it becomes economical to dig up rare earths in other countries.

Molycorp is reopening production at Mountain Pass, California — which it shut down when it found it could not compete with Chinese prices while operating in an environmentally friendly way.

Colorado-based Molycorp's old customer base has changed, and it is seeking new clients. Historically, Molycorp provided rare-



A LIMIT: Stanley Trout

earth minerals for catalytic converters and refining petrol; now it will also supply Japanese customers with neodymium, which will ultimately go into turbine magnets.

Trout says his company has lined up several letters of intent from potential customers that it can take to banks when it applies for financing.

A rush to find and extract rare earths is building in North America, Australia, Russia and Africa. Bird believes that although it may take a while, Brazil could also produce "a significant amount of the world's needs".

Trout says it can take \$500m to start a mine, and six to 20 years for it to come on line. "It's not a simple business at all," he adds.

Deposits can be hard to extract. There are 150 rare-earth deposit projects around the world, but each is different, and figuring out how to extract is time-consuming.

CUTTING EDGE:
Taking rock samples with a diamond saw at Medallion's Red Wine rare-earth project in Labrador, Canada



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