

STRATEGIC METALS

Your monthly guide to the latest information on the world's strategic metals

Rare Earths Industry Expanding Outside China's Borders

Colorado based Molycorp Inc. is one of the few non-Chinese mining companies developing rare earth metal mines. The company's shares shot up by over 7% when it announced that its Mountain Pass rare earth mine in California contained at least 36% more proven or probable reserves than



Lynas Corporation Limited's Advanced Materials Plant in Pahang Malaysia

earlier estimated. The deposit is now estimated to contain about 2.94 billion pounds of rare earth oxide equivalent, an amount that is about 11 times the existing annual global demand of 120,000 tons. The number could rise further with progress in drilling.

Molycorp sold 3,050 tons of rare earth equivalents in 2011—most of which was from existing stocks, and hopes to successfully reach its Phase 1 annual target of 19,050 tons by the end of Q3 this year. Phase 2 of the expansion project is expected to be completed by the end of 2012 and increase production capacity to 40,000

tons per year.

Meanwhile, Molycorp is all set to purchase Toronto based Neo Material Technologies in a cash and share deal that will grant Molycorp access to the advanced rare earth processing abilities and patents of Neo. CEO Mark Smith of Molycorp said, "We are putting those two together

(Molycorp's massive production capacity and Neo's abilities) and forming the best full supply chain capability known in the industry." Commenting on the timing of the deal, he said, "By the time we get through the integration process, putting the two companies together, that should—timing wise—fit in right about the time that Phase 1 is ramping up."

The Molycorp-Neo deal is very significant since Neo owns facilities in China, Germany, Thailand and North America and it will give Molycorp a foothold in China, the world's largest consumer of rare earth metals.

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Australia's Lynas Corporation Limited is Molycorp's closest competitor but the company has been facing several permitting delays with its Lynas Advanced Materials Plant (LAMP) being set up at Pahang in Malaysia. However, the project has made progress on many other fronts. A temporary license was secured in February 2012 and at that time, construction was 96% complete, pre-commissioning test packs were 60% complete, and customer contracts for each type of product and market segment had been signed. The project is expected to be ready as per schedule for the first feed to kiln and for first production by Q2 this year.

Meanwhile, the company's Mount Weld Concentration Plant in Western Australia is operating normally. The company's Central Lanthanide Deposit (CLD) contains about 15 million tons of resources with about 1.5 million tons of contained rare earth oxides (REO). Feed to the plant was initiated in May 2011. The production rate of the plant will be synchronized with LAMP in Malaysia, which will refine the concentrates from Mount Weld.

Lynas' Duncan deposit is not far from the CLD and has a current reserve of 2.08 million tons with 15.5% REO. Metallurgical test work is currently underway at the site to check if the rare earths can be extracted economically.

Canada's Montreal based Quest Rare Minerals Ltd. claims that once its project at the Strange Lake Deposit in Northern Quebec begins operations, it will be able to meet at least 10% of the global light rare earths demand and 30% of the heavy ones. Quest aims to largely produce heavy rare earths. Chief executive officer Peter Cashin recently said, "It's a large resource that obviously will be able to deliver and satisfy a long-term shortfall."

Quest expects to be ready to produce 15,000 tons per year of rare element oxides by 2016. A prefeasibility study is currently underway and is scheduled to be ready by the end of 2012. The feasibility report after

that is slated for a Q3 2013 completion. Cashin said that the company is in discussion with possible customers in the US, Western Europe and Asia and once the prefeasibility report is ready, Quest is likely to release customer names.

Canada's Saskatoon based Great Western Minerals Group Ltd. (GWMG) is another non-Chinese rare earth producer with ambitious plans. It currently holds five exploration projects located at Steenkampskraal, Red Wine, Hoidas Lake, Douglas River and Benjamin River.

The Steenkampskraal mine contains some of the richest grades of rare earths. It was abandoned in 1963 and contains a significant amount of radioactive waste because of the presence of thorium. The company aims to reopen the mine as soon as possible in spite of the risks involved during the process. Earlier this month, the company reported satisfactory progress with the mine refurbishment while a technical report preparation is currently underway.

GWMG raised \$90 million through a bond offering and plans to use the funds to complete a Canadian National Instrument 43-101-compliant technical report and to develop the project. Assay results have revealed the presence of a higher concentration of REOs compared to other mines. Contracts to set up a mixed-chloride facility and separations plant have already been signed. Power supply facilities and mine design work are next on the company's agenda.

There are several other companies vying to get ahead and become the first large-scale non-China based rare earth producer but as Jon Hykawy, an analyst with Byron Capital Markets in Toronto said, "There is room for maybe four or five heavy-rare-earth companies out there, producing up to the 5,000 to 10,000 tons per year level."

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Manganese Production Gearing Up Worldwide

Manganese may be the fourth most used metal in the world but last year ended on a relatively weak note for manganese products. While Chinese ports had large stockpiles of manganese ore, the weak demand for steel long products was reflected in a weak demand for manganese. The economic uncertainty and low business confidence in Europe and the USA were key reasons for the lack of interest in manganese. The recovery of the construction industry in these regions would certainly be a big boost to the manganese market and prices would firm up by 2013.

China's infrastructure market appears to be on the rise again and if the trend continues along with similar trends in India and other Asian nations, the manganese market could secure itself in the long-term. The growth of the Asian automobile market would also drive manganese prices upward. In fact, the growth of the infrastructure market in China and India, and thereby the demand for steel, is expected to trigger an average annual growth rate of 6% in

the manganese market over the next five years. Prices, on the other hand, are expected to increase by about 20% over the same period in comparison to 2011 levels.

After the steel industry, the battery manufacturing industry is the largest user of manganese and is also expected to stimulate the manganese market. China and other south Asian countries are expected to show a high



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demand for manganese for primary batteries, especially lithium and alkaline batteries, while Europe, Japan and North America are expected to show a high demand for manganese for lithium-ion secondary batteries.

The growing demand for manganese will naturally require new supplies to enter the market. The main producers of manganese are China, Australia, South Africa, Gabon, India, Brazil and Ukraine. Although existing and projected supply of manganese ferroalloy from these countries are expected to meet the medium-term demands, China's industry restructuring and power restrictions could cause supply problems in the short-term.

Africa is gearing up to begin development of about 10 million tonnes per year of new manganese mining capacity. About 6.3 million tonnes per year of that is planned for South Africa. Perth based Segue Resources has announced a maiden manganese resource of 13.9 million tons at its South African Emang project. Steven Michael, MD, said, "The inferred resource of 14 million tons is at the top end of our expectations and covers only 20% of the prospecting right area. More importantly, the high-grade resource could produce direct shipping ore at 500,000 tons/year for over seven years."

Diversified mining giant BHP Billiton and the government of Gabon are working out the details of an agreement whereby BHP would develop a 300,000-ton-per-year manganese mine at a site that has enough resources to run for at least half a century. Gabon's Mines Minister Regis Immongault told the Australia Africa Business Council (AABC) that Gabon was resource-rich enough to overtake South Africa as the world's largest manganese producer by 2015.

In South America, Guyana is making plans to produce and export manganese ore after 50 years. The ore was last mined about 40 years ago but falling prices forced the closure of the industry. The current rising prices have encouraged the revival of the industry. Canada based Reunion Manganese, a subsidiary of Reunion Gold Corporation, was granted four prospecting licenses to explore and develop a manganese rich area in northwest Guyana. The company has announced that it expects to produce and export the metal from the

Matthews Ridge site by Q4 2014. The pilot plant is scheduled to be up by April next year.

President Donald Ramotar said, "Guyana used to be an exporter of manganese in the '60s, but at that time the technology wasn't very well developed. It has become viable again. Next year the company will start commercial operations and will begin exporting around the same time." Guyana hopes to boost its economy by investing in mining operations, not just manganese but gold and oil as well.

China's electrolytic manganese metal (EMM) industry is undergoing restructuring and that would mean fewer large operations. From 2011 to 2015, about 30 EMM units with capacities of over 30 kilo tonnes per year are being set up and planned. In an effort to modernize the industry, several small scale units have been shut down. However, in spite of any dip in numbers, China will most likely remain at the top of the EMM market for some more time since it produces almost 98% of the global EMM. Either way, China's EMM production costs are rising, due to lower grades and depleting resources of carbonate manganese.

Meanwhile, American Manganese Inc. is focusing on completing and publishing its NI 43-101 prefeasibility study. The company aims to institute a patent-pending process whereby EMM, EMD (Electrolytic Manganese Dioxide) and CMD (Chemical Manganese Dioxide) will potentially be produced on site at its Artillery Peak Deposit in Northwest Arizona, USA. The company hopes to achieve this by reducing water and electricity consumption. Arizona's lower electricity costs are an added bonus.

Speaking about the project, Larry W. Reaugh, President and Chief Executive Officer of American Manganese Inc. is excited by the potential opportunities of high purity EMD and CMD for use in the emerging battery industry. "Our process can produce a high purity EMD and CMD to service the growing demand coming on stream due to the electrification of the automotive industry and we are well positioned to potentially be the first producers of Electric Metals utilizing domestic resources."

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