

MANGANESE

By Ian Robinson

After many years of stagnant growth and excess capacity, the world boom in steel production, particularly in China, sparked a sustained recovery in demand for manganese alloys during 2003. The strong demand for manganese alloys was exacerbated by interruptions in supplies from key producers and the resultant shortage precipitated a sharp rise in prices towards the end of 2003 and in early 2004.

The Metal Bulletin quoted prices in Europe of both high-carbon (HC) ferromanganese and silicomanganese in the range €500-550/t during the first half of the year. However, prices softened slightly during the third quarter as a result of the strength of the Euro against the dollar and an increase in imports following the lifting of anti-dumping duties against imports from the Ukraine and China. Prices rebounded rapidly in the final quarter in response to the growing world shortfall between demand and supply and by the end of the first quarter of 2004, the Metal Bulletin quotations for silicomanganese and HC ferromanganese in Europe had more than doubled to the ranges €1,250-1,350/t and €1,100-1,200/t, respectively.

According to estimates by BHP Billiton (BHPB) South African subsidiary Samancor and the International Manganese Institute (IMnI), world demand for manganese alloys rose by over 6% in 2003 to 9.1 Mt contained manganese (Mn) units.

The rise in demand for manganese units by the world steel industry also led to a rise in world demand for manganese ore. BHPB estimated that world demand grew by about 5% in 2003 to nearly 23 Mt.

According to Samancor/IMnI, China was the world's largest exporter of manganese alloys with a 31% share of world trade. China was followed by the CIS states with a 20% share. The two largest suppliers based in the Western world are Eramet with a 10% share and BHPB with 8%. Smaller suppliers include Japan (6%), CVRD of Brazil (4%), Assmang of South Africa (2%) and Autlan of Mexico (2%).

According to the same sources, global trade in manganese ore in 2003 totalled 8.2 Mt, (contained Mn units), BHPB was the largest exporter with a 23% share of world trade, followed by CVRD and Eramet with 11% each, China with 9%, Assmang (8%), Ghana (5%), CML of Australia (4%) and Autlan (3%).

The recovery of the manganese market during 2003 confounded forecasts made at the 4th Metal Bulletin Asian Ferro-Alloys conference held in Hong Kong in March. At this conference, vice president of manganese marketing at BHPB Marketing Asia Peter Toth forecast that world production of

manganese alloys in 2003 would amount to only 8.2 Mt and warned that it may be necessary to cut global output by about 150,000 t in order to avoid the chronic oversupply situation which the ferrochrome industry has experienced.

Speakers at the conference also focused on the key role that China will play in the future of the world manganese market. Toth noted the danger of excess supplies of low grade ore, particularly from China, which could precipitate a 'death spiral' in prices and he pointed out that the use of low-grade ore to produce manganese alloys may prove to be a false economy relative to the greater efficiency of production of alloys based on the use of high-grade ore.

Another speaker at the conference, GM of Australian ore producer Consolidated Minerals Michael Watts noted that Chinese ferro-alloy smelters hold an advantage over their competitors in other countries because their low capital costs give them the flexibility to cut production or switch production to another alloy.

BHPB has recognised the importance of Chinese domestic manganese ore production in the world industry and has embarked on a detailed study.

BHP Billiton

BHPB raised its production of both manganese ore and alloys from both its South African and Australian operations during the financial year (FY) ended June 30, 2003. Total saleable production of manganese ore was 4.10 Mt, an increase of 16% over production in FY 2002. BHPB's South Africa subsidiary Samancor contributed nearly 55% of the total.

Total saleable production of manganese alloys was 737,000 t, an increase of more than 19% over FY 2002. Both alloy plants - Samancor Metalloys in South Africa and Temco in Tasmania, Australia - were operating at full capacity by the end of FY 2003. Metalloys has an annual capacity of about 500,000 t of alloy, twice that of Temco. Both plants produce a mix of HC ferromanganese and silicomanganese. At Metalloys, the South Plant is dedicated to silicomanganese and has an annual capacity of 72,000 t, representing less than 15% of total smelter capacity. A modernisation programme over the last few years has reduced the number of furnaces at Metalloys from 11 to seven. Temco has four furnaces; during 2003, two were used to produce HC ferromanganese and two to produce silicomanganese but in early 2004 one of the silicomanganese furnaces was converted to the production of HC ferromanganese.

A fire at Metalloys' South Plant on August 10 resulted in the loss of several weeks production of silicomanganese amounting to about 12,000 - 14,000 t. The loss of this production had a significant effect on world supplies and prices, particularly in the US where Samancor is believed to supply up to a quarter of total consumption. Production was resumed at the end of September.

Eramet

The world's largest single producer of manganese alloys, French-based Eramet was forced to rationalise its production in China and France during the year and in September announced that it would embark on a programme of restructuring its alloys division. In mid-year Eramet closed its Shaoxing Comilog Ferro-Alloy plant in eastern China in response to pressure from the Chinese government to move heavy industry out of the town. However, Eramet said that the Guilin Ferro-Alloy plant, which it acquired in September 2003, would cover the output lost through Shaoxing's closure. Guilin had a nominal capacity to produce 120,000 t/y of HC ferromanganese and 25,000 t/y of silicomanganese but Eramet insisted that its capacity could be raised to levels of 160,000 t/y and 50,000 t/y.

Although Eramet's production of ferromanganese rose by 2% during the first half of 2003, total turnover of the manganese division fell by 16.1% to €391.9 million. An operating loss of over €10 million at the ferromanganese plant at Boulogne, France, led to a decision to close the 350,000 t/y plant by the end of the year. Eramet also experienced problems at its Marietta plant in Ohio, US towards the end of the year and in early 2004. These problems caused by difficulties with equipment and power supplies resulted in a reduction in production to well below the normal monthly level of about 65,000 t.

CVRD

In February Cia Vale do Rio Doce (CVRD) concluded its acquisition of Elkem's Rana ferrochrome smelter in Norway, with the objective of converting the smelter to the production of manganese alloys. Elkem had ceased production at the smelter in mid-2002 because the production of ferrochrome had become uneconomic. CVRD has an annual production capacity of about 2.3 Mt of manganese ore in Brazil and had a total annual production capacity of about 450,000 t of manganese alloy in both Brazil and Europe before it acquired the Rana plant. It already owned a subsidiary Rio Doce Manganese Europe (RDME) which operates a manganese facility at Dunkerque in France with an annual capacity of approximately 140,000 t. CVRD invested US\$10 million to convert the Rana smelter, which comprised two furnaces and a sinter plant, to the production of manganese alloys and its new wholly-owned subsidiary Rio Doce Manganese Norway (RDMN) started operations on the first furnace on June 30.

In February 2004 RDME announced that it would shut down its electric furnace at its Dunkerque plant for relining for 45 days from April 1. This would be the first relining since the furnace commenced operations in 1991.

Assmang

Assmang, South Africa's second producer of manganese ore and alloys after BHPB's Samancor, increased its sales of both ore and alloys during FY 2003 (ended June 30, 2003). Its sales of ore, excluding deliveries to the company's Cato Ridge smelter, increased to 1.2 Mt over 1.0 Mt during the previous FY. Its total sales of manganese alloys rose to 197,000 t from 187,000 t, despite a decline in exports of HC ferromanganese by 15,000 t due to an increase in transfers of molten metal within the plant for the production of refined

ferromanganese. Sales of refined ferromanganese increased to 45,000 t from 32,000 t and silicomanganese sales rose to 25,000 t from 13,000 t.

Sales of ore escalated by 62% during the second half of 2003 to 663,000 t relative to the second half of 2002 (409,000 t) but there was only a small increase in sales of manganese alloys to 100,000 t over 97,000 t. The contrast between the scale of the increase in exports of ore and alloys reflected the greater profitability of exporting ore from South African than alloy. Despite its large domestic production of ore and low costs, it is still relatively expensive to produce manganese alloys in South Africa because of the high cost of imports of different grades of ore (needed to achieve the optimum blend of raw materials) and coke reductants.

Work continued on the development of Assmang's Nchwaning III project in the Northern Cape which was scheduled to come on stream in May 2004. This new mine shaft will ensure ore reserves for a period of at least 20 years.

Nikopol

The world's largest manganese alloys smelter, Nikopol in the Ukraine, became fully privatised during the year when the state's 50% share was sold to private interests. The company embarked on an expansion programme to raise production capacity from a level of about 800,000 t/y to 1.2 Mt/y.