

Manganese Outlook and Symposium Overview

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On behalf of the International Manganese Institute, I would like to thank INFACON for asking me to address you some reflections about the manganese industry during the Plenary Session of this ninth International Ferroalloy Congress.

INFACON Nine will doubtless be an excellent and matchless forum to discuss the latest information and technology about ferroalloys. The quality of the technical papers guarantees a very interesting congress, but **your** presence absolutely assures the success of this event. Thank you for attending.

IMnI, in conjunction with The Ferroalloys Association, have organized the Manganese Health Issues Symposium, which I trust that you will find useful.

The ferroalloy industry is changing rapidly, and manganese is not the exception, so I will give you a general panorama on the recent past and the current trends of this fascinating sector.

Manganese is indeed an amazing matter, especially when we analyze the trends of this industry over the last years.

Today, I will give you a brief panorama about the dramatic evolution experienced by the world manganese industry in the past decade, when the most important changes took place.

Later, I will discuss the current trends concerning crude steel production, manganese alloy prices, demand and supply. Furthermore, I will share with you some reflections about China, the new developments for manganese and the presence of globalization in the manganese and steel industries.

The Manganese Symposium will be briefly discussed along with some personal final thoughts.

Rather than being directly with what occurred in manganese over the nineties, I consider useful a brief comment on what I believe is one of the most important reasons behind the swift evolution experienced by our industry. I mean GLOBALIZATION.

Certainly, our generation has been witnessing real changing times over the past 20 years. I can fairly say that, since the latter part of the past century, almost everything has changed.

China, computers, the former Soviet Union, education, and all kind of technological communications (including the internet) are just a few examples of what I am mentioning. And all these examples are influenced by globalization, in one way or another.

But, what is globalization? I believe that it is a dynamic economic and social system that is a latter consequence of the industrial transformation started in many countries during the nineteenth century. The exoticism of this dynamic trend has led us to an inexorable integration of countries and markets, where communication remains paramount to our lives. Culture and language tend to be more and more homogenous across the world and, unfortunately, typical habits, meals, dresses and... thoughts, have been converted in simple tourist and folk attractions. Free markets, open economies and global corporations are now the new paradigms.

So far, the manganese industry has been very sensitive to globalization and I am sure it will continue to be.

Over the nineties, the manganese industry was really impacted by the dissolution of the Soviet Union, the active participation of China in the western markets and the chronic oversupply of manganese alloys, among other facts. These factors prompted the closure of a number of non-integrated alloy producers and the first signs of a true manganese integration. We may recall the first linkages between Elkem and BHP; SEAS and CVRD, BHP and Autlán, as well as the joint ventures between the South African and Japanese alloy producers.

Notwithstanding these important deals, I believe that the most relevant changes experienced by our industry in recent times took place when Billiton and Eramet came on the stage.

Ownership structure of the world's market mining and alloy operations underwent a significant change within a matter of a few days in December 1998, when Samancor was restructured as a jv between Billiton and Anglo American, and when BHP Manganese division was sold to Billiton-AAC.

Just a month later, it was announced the acquisition of the manganese assets of Elkem by Eramet. The impact of these two deals on the market was extremely important. The Billiton deal converted the group in the most important manganese ore producer in the world, and in the case of Eramet, it became the world's leading manganese alloy producer company.

It is also noteworthy the strengthening of CVRD in the manganese world, when it began to control 100% of VUPSA in December 1999.

It is quite interesting to know how our industry has changed in just a decade.

This slide shows the shape of the world manganese ore production in 1990 against 1998, the year when the most important changes took place. You can see that the

dissolution of the Soviet Union, the growth of China and the strategies of the top 3 producers (Billiton, Eramet and CVRD) substantially modified the ore structure.

The concentration of manganese ore supply is extremely evident. Only the top 3 producers accounted for 47% of world production in 1998. However, it should be noted that these companies handle the high grade ore of the world, which implies the real control of most of the marketable ore in western markets.

Turning to manganese ferroalloys, we can see a sharp contrast between 1990 and 1998.

By 1990, the former Soviet Union accounted for about 26% of world alloy output; the 3 top producers (Samancor, Comilog and CVRD) were not so large and there were a great number of medium and small producers atomized in "others" accounting for 51%.

By 1998 and 1999 (reminding that Eramet's deal took place in the early 1999), the panorama was quite different. Many small and medium non-integrated suppliers had disappeared; China had strengthened from 8% to 24%, and the top 3 producers has more than doubled their share.

Production concentration is again an important issue since the top 3 producers account for 30% of world output, and in some alloys, they are the most significant suppliers.

Having reviewed the recent history, what is currently happening in the industry?

First of all, from the demand side, world steel production hit a record in 2000, reaching 846 million metric tons. This volume represented a 7.4% surge compared to 1999, mainly attributed to the healthy trend of the first months of 2000.

However, as can be seen from the chart, the monthly steel production volumes began to fall significantly over the last quarter of the year, reflecting the start of the economic

slowdown recorded by the United States and other countries.

For 2001, we expect that world crude steel output might decrease by 5% year-on-year. But, we must say that during the first months of this year, we have received mixed signals from the steel industry, because we have noticed significant regional differences in the strength of the steel markets. In this sense, while the USA really weakened in the first quarter, crude steel output from China, other Asian countries and several Latin American producers continued to grow.

One of the most affected steel regions are doubtless North America, where the USA, Canada and Mexico have recorded significant output declines over 2001.

In the specific case of the USA, its steel industry has been challenged by a number of factors that have exerted strong pressure on their operations. The excessive inflow of imported steel products, the soaring natural gas prices in 2000, the production cutbacks of automobiles, and the exiguous demand conditions of the US economy are some of the reasons behind this lackluster panorama.

Accordingly, the number of steelmakers which have been under protection of Chapter 11 of bankruptcy laws has been growing, as can be seen from the chart, revealing the poor state of the industry. It is noteworthy for the manganese industry the bankruptcy and closure of US mini-mill TRICO, since it is one of the largest consumers of medium carbon ferromanganese in the USA.

As for manganese alloy prices, the chart shows the contrasting trends for the US market in 2000, and the first months of this year.

Generally speaking, average US prices were higher in 2000 versus 1999 due primarily to the temporary tightness experienced by some alloys and the healthy demand from steelmakers over the first quarters of that year. However, on a monthly basis, prices

declined over the second half of 2000, reversing the growth recorded in the first months of the year.

The shutdowns of several steel blast furnaces in the USA exerted strong downward pressure on the consumption of high carbon ferromanganese, and prices rapidly eroded since September, offsetting the gains of the first semester. US medium carbon ferromanganese oversupply prompted a steady fall of prices for this alloy in the last months of 2000, stopping the strong and sudden strength recorded in the second quarter. As for silicomanganese, the US market was flooded by foreign material, depressing prices from March to October.

Over the first months of 2001, silicomanganese prices are the only ones that have slightly strengthened, underpinned by the anti-dumping suit against Venezuela, India and Kazakhstan. The near term outlook for the other manganese alloys remains bearish.

Preliminary and timely figures released by the Statistics Committee of IMnI reveal that world manganese ore production was 21.7 million metric tons gross weight in 2000.

As can be seen from the chart, 2000 output is the lowest one compared with 1985, 1990 and 1995. Notwithstanding this trend, the decline in world output of manganese ore may be more apparent than real due to the lack of consistency and quality from the CIS and Chinese figures.

However, despite this statistical problem, we do see a real long term decline in manganese ore production derived from the fall in steel production in the CIS countries, and the more efficient use of manganese ore.

As for manganese alloy production in the world, IMnI's figures for 2000 show the greatest output compared with 1985, 1990 and 1995.

Preliminary results recorded 3.3 million metric tons for world HC FeMn, 0.8 million metric tons for Refined FeMn and 3.6 million metric tons for SiMn.

According to this chart, world manganese alloy production has grown steadily over the last 15 years, but the trends registered by steel production and manganese alloy prices, clearly suggest that supply has been more than adequate

In line with the increase recorded by world alloy production in 2000 and the state of the steel industry, Metal Bulletin has released that world consumption and supply balance for FeMn and SiMn has been in surplus for many quarters since 1999.

World oversupply was present in all 1999 and the last quarters of 2000. For 2001, this firm foresees that oversupply will continue. The blue area in the chart is oversupply.

We expect that oversupply will continue to play a key role in world prices, which will be under downward pressure for a while, unless the existence of other extraordinary factors (such as anti-dumping suits or healthy regional steel conditions).

On the face of the events that we have experienced in the manganese world, what has been the real role played by China?

China is certainly an interesting issue within this subject. For many years, China was a little bit hidden from the western market.

However, it is true that this country, along with the former Soviet Union, began to come on the international stage when they imported substantial quantities of high grade manganese ore in 1983 and 1984.

But during the past decade, China really appeared as a traditional supplier of manganese alloys to the west. Also of note is that China now accounts for about 24% of world manganese alloy output, being practically the largest world producer. This

country is also the hegemonic producer in Asia, but by contrast, it inexorably relies on western high grade manganese ore producers due to the low grade of local ores.

China's manganese ferroalloy production has recorded an impressive growth over the last years, in line with its outstanding steel output. However China's alloy supply has been greater by far than its domestic needs and there have been large quantities available for exports.

Chinese high grade manganese ore imports surged by 13% in 2000, being the greatest volume since 1998, despite the reduction of high grade ore shipments from Gabon, Australia and South Africa. But other countries, such as India and Myanmar substantially strengthened their market presence in China, by selling large volumes of manganese ore.

Thanks to this ore supply, China produced enough manganese alloys to meet its healthy domestic demand and increase its exports. It should be noted that Chinese exports of high carbon ferromanganese, medium carbon ferromanganese and silicomanganese soared by 46%, 167% and 21%, respectively in 2000.

We cannot ignore that the growth experienced by Chinese ferroalloy producers has definitely impacted western markets.

However, China has not been immune to globalization and is currently living new times that will drastically transform its present shape. The China Ferro-Alloy Industry Association has announced a number of actions that will certainly order the structure of its industry: Among them, it is worth to mention that China has planned to scrap down old plants, prohibit the construction of new electric and blast furnaces until 2005, prevent environmental pollution, promote the development of new technologies and carry out mergers or consolidation at their companies. We really trust that this ambitious program be

successful, so that the world manganese industry can orderly balance its supply and demand.

Now, I would like to turn to a very exciting matter, I mean the sectors where manganese has a true potential to be developed.

According to experts, manganese has a bright future in the area of primary alkaline batteries, with the soon to be introduced new high-end alkaline cell batteries. These newer, higher performance primary cells are targeted for use in the upcoming generation of portable electronic devices, like cell phones, digital cameras, etc., which demand power from improved lifetime batteries capable of delivering high power and a fast rate of discharge.

Manganese, in the form of electrolytic manganese dioxide, is a key raw material component in the development and manufacture of these new alkaline dry cells.

On a smaller scale, highly "engineered" manganese chemical derivatives are finding applications in catalyst uses, ranging from feedstock cleanup to specific reactions to atmospheric pollutant removal.

While we do not foresee significant changes concerning the development of manganese in other traditional applications, such as steel production and non-steel alloys, the contribution of manganese to these sectors will continue to be essential to the world economy.

Having discussed some of the most important variables for manganese, I would like to turn again to the principle of this presentation, giving you some reflections about the impact of globalization in our industry.

Globalization is an omnipresent factor for the manganese industry, which has drastically changed its shape in just a decade.

We have witnessed the creation of new powerful groups that control most of the market.

Practically no producer is alone now and supply and pricing trends are deeply affected by global practices. Independent or non fully manganese-energy integrated companies are fiercely challenged by the present and future, because high competition along with the lowest costs represent the new flag.

We must recall, that there are further adverse factors that we are facing now, such as the depressed steel outlook, depressed prices and oversupply.

Integrated players should also understand that destructive competition will never create profitable businesses, which I believe, is the aim of all businessmen.

I foresee that there will be a number of investment opportunities between medium and large companies over the immediate future, that should be carefully analysed for the benefit of both parties.

On the other hand, market rationalization will always be a significant issue while oversupply is not appropriately and legally corrected. I think the manganese industry requires sound strategies so as to avoid the poor state we are living nowadays, only offset, in some cases, by circumstantial exchange rate fluctuations, dumping suits or other extraordinary events.

In summary, nowadays manganese is inexorably a global industry and as such, it requires a new order to avoid over-production and unfair commercial practices.

Globalization is not over and will continue to trigger more fundamental changes in the mining industry.

A clear and recent example of this is the announcement of the merger between Billiton and BHP.

Even though the merger will not add further ferroalloy or manganese operations to Billiton's portfolio, the new group will have leading positions in copper, iron ore, aluminum and titanium, as well as interests in nickel, gas, oil, diamonds and silver.

As for the manganese operations within the new group, media has speculated a lot, but this issue remains paramount to the industry, in case of further changes.

The world steel industry is experiencing thrilling changes, and its shape is tending to be integrated into a few global groups.

The announcement of the integration of Usinor from France, Arbed from Luxembourg and Aceralia from Spain in February 2001 confirms the effects of globalization, passing over country borders, reducing costs by economies of scale and strengthening the commercial presence to be more competitive.

There are many other recent examples, such as the alliance agreement between Nippon Steel from Japan and Usinor from France; the agreement between NKK-Kawasaki Steel and Thyssen Krupp; the technical cooperation between Kobe Steel and Luchini group from Italy, and so on.

So, continents are more and more linked now, and only the companies really interested in evolving according to this new path will have more opportunities to survive.

Regarding the Manganese 2001 Health Issues Symposium, which will begin today, I would like to thank the Manganese Committee of The Ferroalloy Association, and the Occupational Health, Environmental and Safety Committee of the International Manganese Institute for their valuable cooperation in organizing and preparing a faultless program.

As for the participation of IMnI in health issues, I would like you to know that our OHES Committee is chaired by Mr. Leif

Andreassen from Tinfos and is engaged in providing medical, scientific and regulatory support for members, so that health and environmental issues are properly dealt with by the manganese industry. This Committee also provides advocacy support for members, and help them to efficiently defend and promote their economic interests, particularly toward regulatory authorities.

The Manganese Symposium is bringing together top researches from around the world to present papers and debate on manganese health and environmental related issues. I consider that this is a matchless opportunity for all those really interested in manganese.

Today we will have the Opening Session in the morning and a second session titled Mechanism of Toxicity.

Tomorrow, the Symposium will offer three sessions about Pharmacokinetics, Human Health and Epidemiology.

And on Wednesday, there will be a session on Risk Assessment, concluding with a final session for discussion and debate.

I really trust that you will find interesting and useful the information we have gathered and prepared especially for you.

Dear colleagues,

As a conclusion, I would like you to remind that Manganese is and will continue to be a wonder element for mankind. Because of its multiple uses, it is everywhere in our daily lives. And this should remain the case, as there are no satisfactory substitutes for it in its major applications.

Manganese is also essential to ensure the health and well-being of people, animals and plants. So manganese will continue to play a fundamental role for a long time, since it is a necessary element in so many of the products surrounding us, and there are enough resources in the world to meet demand.

However, as you know, the immediate future is fiercely challenged by a number of factors, some of them under our control (such as oversupply), and others well beyond our influence (such as the demand from steel).

I urge all the manganese producers to carry out sound strategies so as to overcome these difficult times with success.

Thank you for your kind attention.