

Analysis on the competitive tendency in Chinese stainless steel market and the advantages of Shanghai No.1 Steel Company of Baosteel Group

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Abstract: By analyzing the recent-year Chinese stainless steel market situation, this paper points out the facts of future competition tendency: China will become a net export and self-supplied country of stainless steel products by 2010; market competition will focus on the cost-effectiveness instead of the short-term output expansion, and pursue fine quality, featured products, and characterized services; merger and acquisition will also be one competitive tendency; as the limitation of the shortage of nickel and other raw material resources of stainless steelmaking, low-nickel content products will be expanded rapidly and its promotion will become the inevitable option by Chinese enterprises. Shanghai No.1 Steel will rely on the overall advantage of the mother company Baosteel Group, and participate in global competition actively while satisfying the domestic market demand.

Keywords: Baosteel Group, Stainless steel, Market tendency

As one of the most important metal products, the stainless steel production and consumption have been rapidly increased over the last century, especially the yearly average rate up to 5% in the last 50 years. And following the last 20 years' economic development, China has now set up a solid foundation for further development of stainless steel industry and becomes the world front runner regarding the consumption, the production and import growth of stainless steels. For example in 2003, the appearance consumption of stainless steel in Chinese mainland surpassed 4 million tons, including nearly 3 million tons imported, which was over the total annual consumption of Japan and the United States.

The fast growing Chinese stainless steel market provided good market opportunities for stainless steelmakers, and attracted many domestic and foreign investors' attention. It is a fact that the Chinese stainless steel industry is being developed very fast in recent years. This paper makes a brief analysis concerning how the Chinese stainless steel market will be developed in the next years and what the competitive tendency is under the global economic integration and also introduces the construction of the stainless steel project in Baosteel Group Shanghai No.1 Iron and Steel Co.,Ltd.

1. The strong growth of stainless steel market in China

1.1, The production and consumption of Chinese stainless steel since 1990's

The strong growth of appearance consumption of stainless steel indicated that the stainless steel market in China was developed very fast in past years. For example: the appearance consumption jumped from 0.26 million tons in 1990 to 4.2 million tons in 2003, with the net growth being 4.0 million tons. The production growth of the stainless steel was slower than the consumption growth, though it increased by 2.38 million tons, nearly 10 times more than that in 1990. In 2003, more than 1.7 million tons domestic production output of stainless steelmaking proved that the status to the raw materials for cold rolling was eased up gradually ; The fact that the production of cold rolling stainless steel strip (B \geq 600mm) reached over 900,000 tons had greatly changed the situation that China mainly depended on the import of cold-rolled stainless steel strip .

1.2, The characteristics of development and change in Chinese stainless steel market

With the fast development of economy since China reformed and opened to the world, stainless steel consumption in China increased sharply from the beginning of 90's of last century (See Figure 1). This period's characteristics can be summarized as follows: The increase of production was slower than that of consumption, export rate slower than import one; regarding production, section steel less than flat product, hot rolled strip less than cold rolled; the state-owned enterprise production slower than private ones, industrial consumption less than civil uses.

Over the last 14 years, the Chinese consumption of stainless steel has grown by 16 times, which is much faster than its production growth speed .

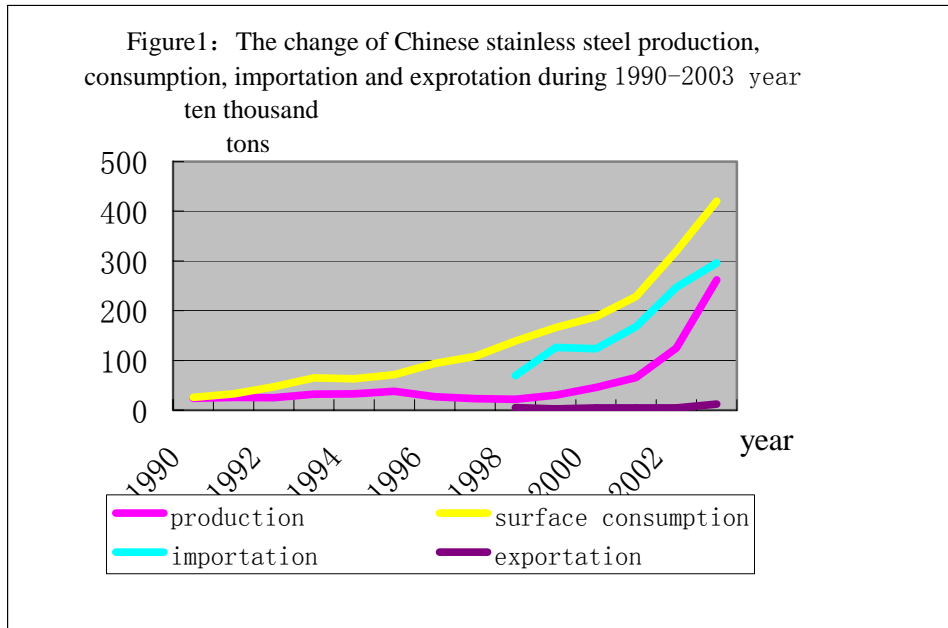


Figure 1 shows obviously that Chinese consumption of stainless steel relied on the import, as example, from South Korea, Taiwan province and Japan to make up the short domestic supply and big need in recent years, but the increasing amount of import tended to going down. Among the total consumption, 80% were strip and plate consumption, that is why the growth of their consumption led to the increase of total consumption of stainless steel, and the most consumed stainless steel products were strip and plate with the steel grade of austenite.

From the viewpoint of the investing parties, there are many private steelmakers investing in cold rolling production line, who gradually grow in scale and competence. They focused on improving the quality of products continuously and stretched to the fields of hot rolling and steelmaking. Meanwhile, the development of the joint-ventures was speeding up as well. The state-owned enterprises set the foundation for further development of China's stainless steel industry. There are two big stainless steel production bases, TISCO in northern China and Baosteel Group in southern China, initiating in a large scale, plus many other stainless steelmaking projects being invested or constructed, which will change the situation of big imports of hot rolled stainless steel products in China.

From the viewpoint of consuming parties, the Chinese stainless steel consumption was being pushed up mainly by hardware application in house decoration, kitchen appliances, light and electrical industrial appliances and office utilities and so on.

2. The Chinese stainless steel market has stepped into the competition stage

2.1, The global competition after being a member of WTO,

The tariff for stainless steel imports to China has now decreased faster than that of other steel products since China was a WTO member. By prediction, it will fall down to 10% in 2005 from original 20%. The above situation intensifies the competition in domestic stainless steel market. In the meantime, China's reform and open policy enabled foreign capital to enter Chinese stainless steel market easily, and further lowered the barrier which originally prevented products of foreign enterprises entering Chinese market. The outstanding Chinese stainless steel market also attracted massive foreign capital in recent years. According to a predicting report by the international stainless steel forum (ISSF), the ultimate global stainless steel production amounts to 21.5 million tons, increased by 5.8%, in 2003, but the global stainless steel is still in overproduction in general. In 2003, it is very obvious that the growth of global stainless steel production mainly attributes to the fast development of the Chinese stainless steel market, as the apparent consumption growth of Chinese stainless steel is basically equal to that of world stainless steel. The increased stainless steel production in Japan, South Korean as well as the China's Taiwan province is mainly exported to the Chinese market.

There is a big gap between the existing Chinese enterprises and foreign companies in stainless steel production. The former has some disadvantages of shortage of raw material, small scale, high production cost, low value-added products and unstable quality. Therefore, it is obvious that the economic globalization impacts the China's developing stainless steel industry very much. But simultaneously, the foreign capital entering China also promotes the development of Chinese stainless steel industry. For example, it has brought to China the advanced technology for stainless steel manufacture, the advanced equipment, the production experience and so on.

2.2, The China's undergoing stainless steel projects and the ambitious expansion plans

The Chinese stainless steel market provides the investors with the good opportunities for business, as well as for optimizing and upgrading the structure of Chinese steel products and for reforming some traditional steel enterprises. A lot of innovation and investment projects in China have been set up since 2000, when Baosteel Group decided to build up a stainless steel production line in Shanghai No.1 Steel. According to some reports, the total newly-added productivity of all the undergoing investment projects would

be over 6 million tons of annual output of stainless steel, over 4 million tons of cold and hot rolled strips in the next 5 years. Main projects as follows:

(1) Baosteel Group:

The total annual output of steelmaking and steel rolling would be over 2 million tons after these stainless steel projects are put into operation by Shanghai No.1, Shanghai No.5, Ningbo Baoxin, SKS and Pudong.

(2) TISCO: Taiyuan Iron and Steel Group starts its strategy to expand the stainless steel productivity up to 3 million t/a, and will become expectedly one of the top five stainless steel companies in the world.

(3) Tangshan Stainless Steel Co., Ltd: It plans to be the third biggest stainless steel manufacturer in China. The project started in August, 2003 and will be entirely completed by 2006 when its hot rolling stainless steel productivity reaches 1.2 million tons each year.

(3) Baotou Time Group: a 600,000 t/a stainless steel project in the Baotou Time Group started to be built in November, 2003. It consists of two phases of construction and will be expectedly completed in June, 2006. Among the total output are more than 400,000 tons of thin cold rolled stainless steel strips as final products.

(4) Asia New Steel Co., in Baoding, Hebei province started its project in August, 2003 and will be run in June, 2006, which has an annual output of 1 million tons of stainless steel cold rolled strip.

(5) Changshu Yicheng Special Steel Co.(CYSS) in Jiangsu province hold an opening ceremony of the project in October, 2003, with 300,000 t/a productivity of stainless steel hot rolled coils/plates.

In addition, Posco in Korea will increase the cold rolling ability to 600,000 t/a in the next 3-5 years in China's joint ventures; Taiwan Yilian has started its plan of the stainless steel project in Huangpu, Guangzhou, with short term aiming at 300,000 t/a of cold rolling production and long term aiming at 800,000 t/a of productivity; Taiwan Huaxing-Lihua put a stainless steel project in Nanjing, which is expectedly to produce 900,000 t/a; Besides these, some other investors plan to produce totally 100-800 thousand tons of cold and/or hot rolled stainless steel products in these areas, such as Jiangsu Yixing, Nanjing

Ganglian, Daqing, Sichuan Shawan, Ningbo Hua Guang, Jiuquan, Panzhihua and so on.

3, The main competition tendency in Chinese stainless steel market

The competition in Chinese stainless steel market is inevitably related to such factors as the level of development of Chinese economy, technology and equipment, the degree of market maturity, the limited resources and the environment requirement. According to the current competition situation, the near future competitive tendency will be as following:

3.1, Overproductivity will occur in Chinese stainless steel market by 2010.

According to above-mentioned constructed and extended projects in China, considering that some of those projects will not be fully put into output by 2005, sum of the stainless steel output in mainland China is about 3-4 million t/a , which is less than the consumption and some steel grades will still be imported to meet the need of market. But by 2010 when all of the projects mentioned above are fulfilled, the China's stainless steel output will surpass 10 million t/a and most products will be self-sufficient.

It is roughly estimated on the Chinese stainless steel market by 2010 that the amount of average stainless steel consumption per capita will increase by 15% each year (nearly the same as the average growth rate in the lastest 20 years), before reaching the world level of 4 kg/person (the global average data in 2002 , excluding China) or 3.3 kg/person (the global average data in 2002, including China). In China, the average stainless steel consumption by each person will increase by 6%-10% each year after reaching the average level of 4 kilograms/person, and the stainless steel demand will be 8—10 million t/a by 2010.

Although the price rise of metal Ni would restrict the increase rate of stainless steel market inevitably, it has less impacts on the increase of potential productivity.

According to the above analysis, it is predicted that there will oversupply in Chinese stainless steel market around 2010.

3.2, Periodical characteristics in competition will be very obvious

As a kind of green material, stainless steel has many functional advantages and it will be widely used by human beings for a long time till some new substitutes appear.

The present Chinese stainless steel market is in high speed growth period. Its main competitive characteristic is the expansion of production, which is displayed by so many new construction projects and extension plans with large scale investments. In the past years, the Chinese government took some positive measures to increase the stainless

steel productivity rapidly such as supporting the state-owned enterprises to re-organize, encouraging foreign enterprises to invest in China, guiding non-state owned stainless steel enterprises to the market.

Around 2007, it is predicted that the projects mentioned above would be in operation and the total productivity might reach the domestic demand. The market might be quite mature and the supply and the demand tend to be balanced. By that time, the market competition would be much intenser; the investors would pay more attention to the risk and tend to reduce their investment rationally. Because of the shortage of raw materials, the producers would focus on reducing more production cost than ever before by taking measures, such as applying new process, developing new products.

With competition going fierce, the problem of overproductivity would take place in Chinese stainless steel market. Those producers with small scale production, high production cost, severe pollution and low-level grades would quit out of the stainless steel market. Those survived might pay more attention to product quality improvement, sales services, product research, business integration.

The consumption of the stainless steel is rather elastic. The consumption per capita and the consuming structure are closely related to the economic developing leve of a country, In the diveloped countries, the stainless steel consumption level is higher, for the industry's consumption occupies large proportions; In the extreamly undeveloped contries, the consumption is very poor, only used in industrial application; In developing countries, the consumption is still in low level now, but may be increased quickly along with the speedy economy growth because the consumption depends mainly on the civil consumption.

The stainless steel was mainly applied to some key industry fields in China before the 90's of last century. Its consumption quantity was pulled up quickly by civil application (e.g. home electrical appliances, house decoration and so on) since the middle and late 90's, the use of tableware, cabinet, electrical appliances being about 50%. In the next few years, the stainless steel will be more widely used in civil engineering and construction, automobile transportaiton, machine processing and manufacturing industry as well as environment protection field in China.

3.3, The merging and acquisition also will be the tendency in Chinese stainless steel industry

In the end of 2003, Chairman of LNM Group had a bold prediction that in the next 10 years some huge international iron and steel enterprises with productivity of 80-100 million t/a would be set up and the ten ultra large enterprises of them would produce approximately 50% of the global steel output. For some examples in the international stainless steel industry, merger between Thyssen and Krupp, Germany started from stainless steel field; The merger in Arcelor Group was also concerned with stainless steel production. It can be believed that the merging and acquisition will be a tendency in Chinese stainless steel industry because of the following reasons:

(1) Effect of production scale and/or cost.

In 1990, the top world 16 big iron and steel companies shared 80% of total world stainless steel output, but none of them had the ability to have an output of over 500,000 tons. In 2000, however, the sum of output by the top 12 stainless steel companies was 12.7 million t/a, sharing 80% of total global stainless steel market. The biggest one produced 2 million t/a of stainless steel and cut down its production cost by about 20%. It is predicted that by 2010 the top 8 big companies will possess 80% of the global stainless steel market and the production cost will drop by about 20% again. With the further maturity of Chinese stainless steel market, it is inevitable that Chinese stainless steel companies need further merging and reorganizing driven by the effect of production scale and/or cost.

(2) Influence of resources restriction.

The raw materials for stainless steel production in China, such as nickel, the ferro-chrome, stainless steel scrap and so on, basically rely on import. The sharp growth of Chinese stainless steel output not only causes more shortage of domestic resources, but also more difficulties in global stainless steel raw material resources supply, such as nickel and so on. Those companies lacking of these necessary resources can not produce stainless steel normally. Therefore, the strategic alliance for the up-and-down stream enterprises will be the ideal choice, especially for the jambo companies, for example, the success alliance by Baosteel Group and Jinchuan Group in 2002.

(3) Participating in the global competition.

All parties taking part in the competition may absorb the merits from each other, in the fields of product, process technology and retail sale channel to enhance the ability to compete in global market.

(4) Environment protection

China will carry out the countermeasures for improving demands of environment protection by restricting mid-and-small scale enterprises.

3.4, promoting the market and developing the expansion of low-nickel content products and increasing the proportion of non- austenite steel products.

According to the prediction by INSG, the supply shortage of nickel was 30,000 tons in 2002 and 2003 and actually the price for nickel at the end of 2003 reached a peak prices since 1990. As Chinese economy keeps on developing at fast speed, the development of stainless steel will be a big and inevitable trend. The consumption of nickel in 2004 was 100,000 tons but the supply just 60,000 tons. As the time going, the gap would be larger and larger. Therefore concerning the development of whole Chinese stainless steel industry, it is being a strategic point to resolve the shortage problem of nickel resources.

As a result of limited nickel resources, it is better to pay more attention to the research on consumption experiences in some developed nations and the application experiences of 200 series of low-nickel stainless steel by Chinese neighbor, India to promote the progress of Chinese stainless steel industry. And we have to study the application of other non-austenite steels and to develop new series of stainless steel. There are three ways to be considered:

(1), To lower austenite steels ratio and to make use of nickel-saving stainless steel as more as possible;

(2), To expand the uses and to produce more non-nickel, i.e., ferritic stainless steel;

(3), To research and develop new low-nickel content of stainless steel.

4. The project situation and the development advantages in Baosteel Group Shanghai No.1 Steel.

4.1, The situation of the stainless steel project in Baosteel Group Shanghai No.1 Steel

Based on the existing blast furnaces with iron-making capability of 2.62 million t/a, the constructing project possesses a stainless steelmaking and con-casting production line, a

carbon steelmaking and con-casting line and a 1,780 mm hot strip line.

The designing productivity: steelmaking 2.983 mt/a (including stainless steel 0.75 mt/a, carbon steel 2.233 mt/a), con-casting 2.886 mt/a (including stainless steel slab 0.72 mt/a, carbon steel slab 2.166 mt/a), hot-rolled strip 2.822 mt/a (including stainless steel 0.698 mt/a, carbon steel 2.124 mt/a).

The commissioning of 1,780 mm hot-rolling mill was successful in the last Dec., 2003, the trial production of No.1 and No.2 carbon steelmaking and con-casting lines were carried out one after another in the first quarter of 2004, the stainless steel converter (AOD) and the caster also started to production from April, 2004. All of these facts mark that the constructed stainless steel project in Baosteel Group Shanghai No.1 Steel has been completed comprehensively.

4.2, The competitive advantages of the project of Baosteel Group Shanghai No.1 Steel .

4.2.1 The adaption of the products to meet the market demands and deveoping abilities to make new products continuously

The stainless steel production line in Baosteel Group Shanghai No.1 Steel is not only able to produce common stainless steels to the present market, such as 304, 304L, 316, 316L, 409, 410, 420, 430 and so on, but ultra martensite, duplex, ultra low-carbon and ultra low nitrogen ferritic stainless steels as well. Because it makes use of the strongly stirring by top lance in the converter (AOD) and in the vacuum refining furnace (SS—VOD). Two-step way (so called EAF—AOD) is used to produce general carbon content stainless steels, such as 304, 430 varieties or tree-step way (so called EAF—AOD—VOD) is used to produce low carbon content stainless steels, such as 304L, 316L variety. Furthermore the ultra low carbon and nitrogen ferritic stainless steels (C+N<100 ppm) are also produced. Therefore, it is no doubt that Baosteel Group Shanghai No.1 steel has the competency to produce extrodinary duplex steel, hyperpure ferrite steel, martensite steel as well as austenite steel which are widely used in the fields of automobile, environment protection and architecture. Evidently, the equipment and process in Baosteel Group Shanghai No.1 Steel can produce most of stainless steel varieties developed successfully so far in the world.

In addition, the use of top-jetting dephosphorization device on the hot metal vessel may guarantee to obtain the content of phosphorus as low as 0.01%, sulfur content less than 0.01% (min., 0.003%) when tapping by AOD converter, to produce hyperpure ferritic stainless steel.

Many latest technologies are used in the stainless steel slab caster to make the slab's inner and surface quality excellent and the non-conditioning rate of slab can reach over 90%. The specifications of hot rolled stainless steel strips are 2.0~10.0 mm in thickness and 750~1600 mm in width, whose thickness can meet the demands for thin cold rolled strip production as raw materials and for acid-pickling as commercial products and width may meet the production of either cold rolling, hot rolling or acid pickling worldwide.

4.2.2 Advanced standards and throughout technologies

The production of stainless steel, especially thin stainless steel strip, needs complex processes and advanced technologies and requires liquid steel with pure and precise composition, slabs with dense interior structure, without deflection or defects, hot-rolled strip with good shape, high precision, non surface defects. Therefore, Shanghai No.1 Steel introduced the overall technologies and operation know-how from advanced stainless steel producer at the same time of the project construction, which enable it to produce stainless steel with the same quality as that of foreign producers in a short period.

4.2.3 Good adaptability of raw materials

The particularity of organizing raw materials for stainless steel was considered adequately during the stage of designing this stainless steel production line, so its production process and equipment can adapt the option of multi-raw materials and offer the substituting possibility for different kinds of raw material. For example, the hot metal proportion to the scrap and molten and solid ferro-chromium can be adjusted in pretty wide range; The dephosphorization station may adapt the fluctuation of 40~90t hot metal; The 100t EAF may allow the scrap proportion from 15 to 50%; For nickel, it can be added into steel liquid in many ways such as electrolysis nickel plate, nickel ball, nickel pellet, ferro-nickel and so on. And the proportion of them may be adjusted according to the

different technological requirements and prices in raw material markets; Both the liquid ferro-chrome and the solid ferro-chrome may be used.

4.2.4 Overall superiority of Baosteel Group

Baosteel Group will implement strategy in integrating management of its stainless steel production and will set up a manufactory center for stainless steel products. Baosteel Group Shanghai No.1 Steel will depend on the overall superiority of Baosteel Group to obtain the raw material supply from subcontracters, the stable sale channels and the long-term consumers and enough capital to develop forward, and participate in the global competition positively.

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