

China EMM Market Overview

Tianxiong Mn Industry Group

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一、 Applications of EMM

EMM is mainly used for steel production, it's also used in some other sector:

- Steel Production
 - As forms of flake, lumpy, LC/MC FEMN, Nitride Mn, Aluminum Mn to produce 200 series steel, electric steel, pipe steel, military steel, high temperature alloy steel, auto sheets and so on.
- As the Mn additive in Aluminum industry
- Magnetism materials Industry(Mn_3O_4)
- Manganese copper alloy
- Catalyst such as accelerant
- Batteries

二、 Demand of EMM

1、 China EMM export and domestic demand in 2005:

In 2005, China exported 272 kt EMM in many forms, domestic consumption was around 290kt.

South Africa produced 40kt EMM.

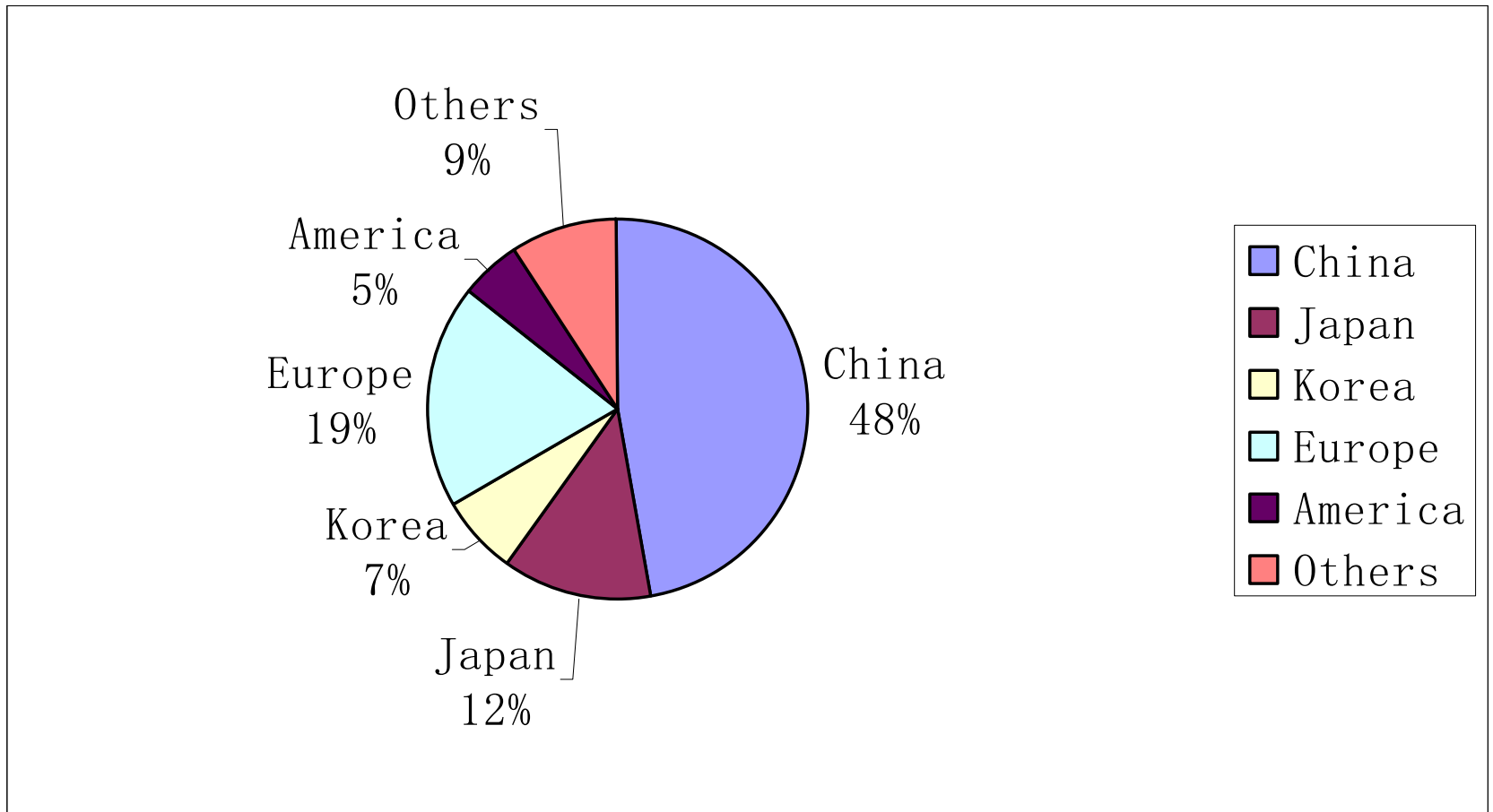
World total demand of EMM was around 600kt in 2005.

China EMM Export by Country in 2005

Destination	Quantity (MT)
Japan	75000
Netherlands	67000
Korea	40000
USA	21320
Russia	16627
Ukraine	13427
India	8321
Taiwan	8241
Spain	6287
UK	4650
Others	24500
Total	约285000

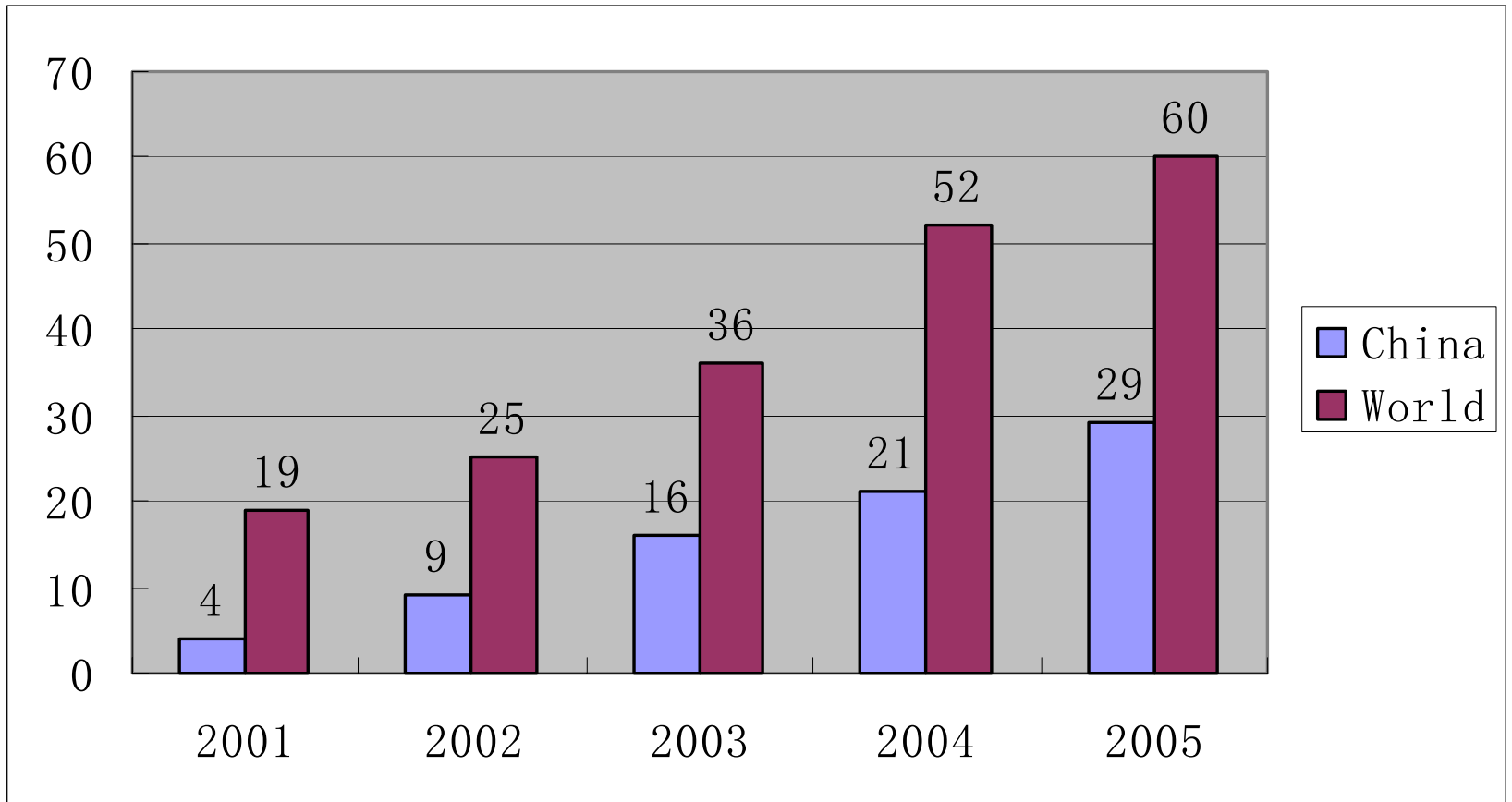
- If excluding the 13kt Mn Metal which were produced by Silico-therm process, China exported 272 kt EMM in 2005

World EMM Consumption in 2005



- **The consumption in Europe is the total consumption in Netherlands, Spain, UK, Germany and other countries. They mainly imported through port LUTEDAN in Netherlands, that's why the import of Netherlands is so high in the previous table.**

China EMM Consumption VS. World Consumption



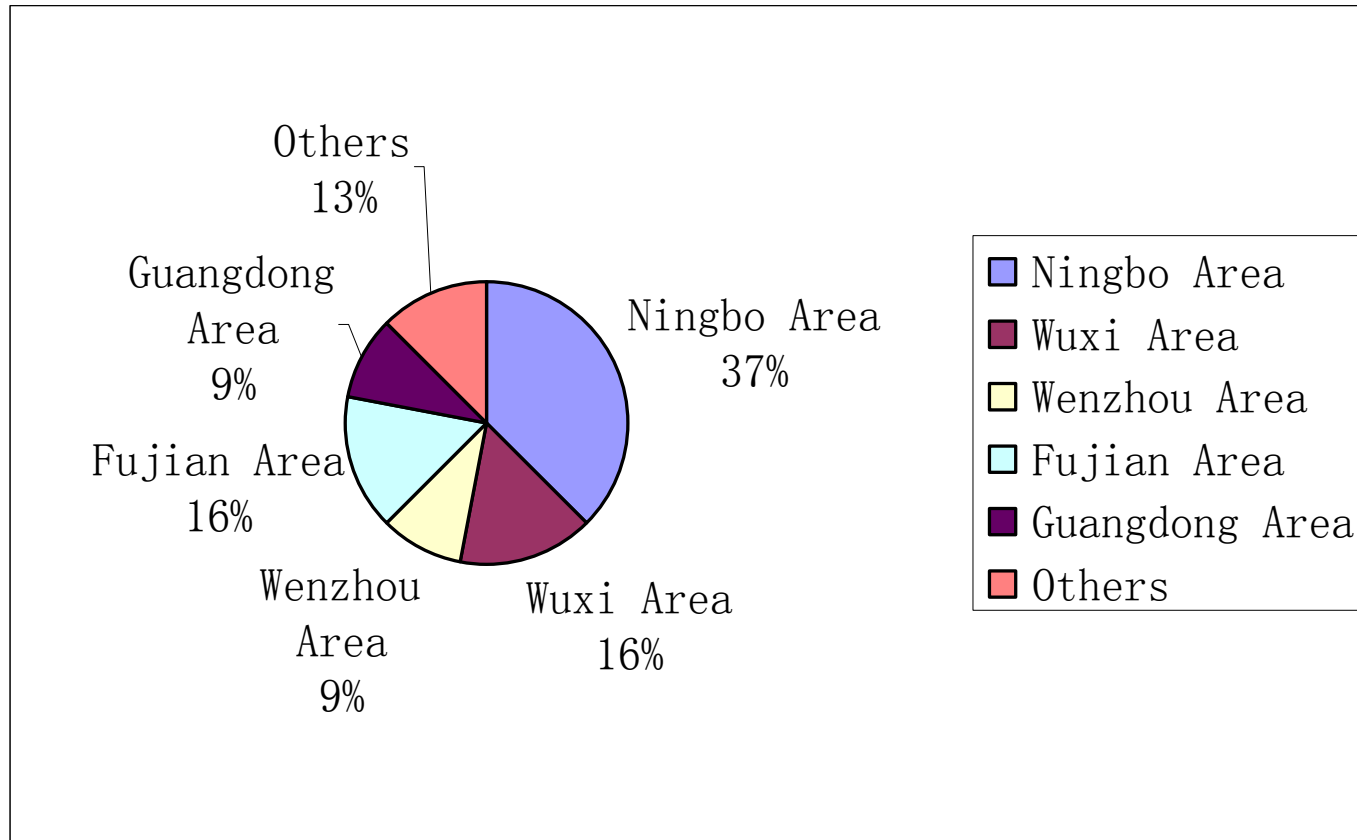
- In 2001, China EMM consumption accounted for 1/5 of world total consumption, this figure increased to 50% in 2005. If we compare year 2004 and 2005, the global EMM consumption increase mainly comes from China.

China EMM Demand by Sectors in 2005

Sectors		Demand
Steel Industry	200 series stainless steel	170kt
	Big and Medium steel mills	30kt
	FeMn and Nitride Mn	30kt
Magnetism Materials	Mn ₃ O ₄	30kt
Others		30kt
Total		29kt

- The demand of EMM in steel industry accounted of 80% of the total demand of EMM in China, the development of 200 series stainless steel is the most important factor which can affect EMM demand.

EMM Demand in 200 Series Stainless Steel Industry by Region in 2005



- Rank the demand of EMM by regions: Ningbo Area, Wuxi Area, Fujian Area, Guangdong Area, Wenzhou Area.

Top 10 200 series stainless steel producers in China

Company	SST Production Capacity (mtpy)	EMM demand (mtpy)
Fujian Wuhang	250000	25000
Qingshan Konggu	120000	15000
Ningbo Huaguang	100000	12000
Inner Mongolia Huayi	100000	10000
Sichuan Xinan	70000	7000
Wuxi Changming	60000	6000
Ningbo Tiandi	60000	6000
Ningbo Hexing	60000	6000
Guangdong Fengyi	50000	6000
Guandong Chengde	50000	5000

- The demand of EMM in top 10 200 series stainless steel producers totaled to 100ktpy, accounting for 60% of the total EMM demand in 200 series stainless steel industry.

2、 Analysis on EMM Demand in 2006

Demand on international market

- Outside China, EMM is mainly used to produce high quality steel, the production of high quality steel outside China is stable, and will provide a stable demand for EMM in this sector.
- Because of their habits and technology, steel producers in Russia and Ukraine prefer using lumpy rather than flake. EMM lumpy can compete with Refined FeMn with these producers. Given the adjustment of EMM industry, the production costs of EMM will reduce further and prices will be more competitive, that will also provide a stable demand of EMM from these producers.
- Taiwan and India already decreased their consumption of EMM in 2005 due to export decrease of 200 series stainless steel to China, it is estimated that the demand of EMM in 2006 will remain stable.
- Magnetism materials industry, the demand of Mn₃O₄ is estimated to be stable in 2006.
- The demand of EMM in battery industry is increasing, the potential of this market is huge.

The demand of EMM outside China is estimated to be stable in 2006, it will remain at the level of 290kt.

Domestic Demand

- State-owned Big and Medium Steel Mills

In 2005, China steel industry began to be in overcapacity, China steel industry will enter a period of low profits in 2006. In order to cover the high costs of iron ore, coke and other raw materials, steel producers will produce more high quality steel instead of long products. Pipe steel and electric steel produced by Baosteel, Wisco and Anshan steel consume large quantities of EMM. The demand of EMM in this sector is estimated to increase at a regular pace in 2006.

- 200 Series Stainless Steel Producers

The consumption of EMM in 200 series stainless steel industry accounted for 60% of China's total EMM consumption. So this industry greatly affects the domestic demand of EMM.

200 series stainless steel developed rapidly from 2003 to 2005, by the end of 2005, the production capacity of 200 series stainless steel reached 2M tons, however, the real demand was less than 1.2M tons. Producers using outdated medium frequency furnaces shut down. The restructuring of this industry is inevitable.

2006 will be a year for the stainless steel producers to regroup and merge. Those who have a production capacity advantage, technology advantage and equipments advantage will dominate the market, while small producers will disappear from the market. The competition will be among the major producers: Wuhang, Huaguang, Qingshan, Hexing, Tiandi, Huayi, Chengde, Fengyi, Changhong, Xinan, etc.

The new structure of the stainless steel industry will help to both ensure the healthy development of this industry but also improve the quality of 200 series stainless steel products.

Each large stainless steel producer consumes 5 to 30 kt EMM every year according to its size. Their purchasing process is different from that of the smaller producers, they usually choose the large EMM producers & establish a stable relationship with them.

The total demand of stainless steel in 2006 will not decrease. The supply decrease from Taiwan and India will be made up by domestic supply. So the domestic EMM consumption in 200 series stainless steel industry will increase slightly.

- EMM consumption in Aluminum industry will increase in 2006.

In 2005, some new Aluminum producers went into production, in addition, some foreign Aluminum producers are considering moving their plants to China.

- EMM consumption in other sectors will remain stable.

Domestic EMM consumption will increase slightly in 2006 and is estimated to reach 300kt.

3、 Summary

In 2006, EMM demand outside China will be around 290kt, domestic demand will be around 300kt, demand of high quality pure EMM from South Africa will be 40kt. So the global EMM demand in 2006 will be 630kt, a little higher than that in 2005.

三、 Production Capacity of EMM in China

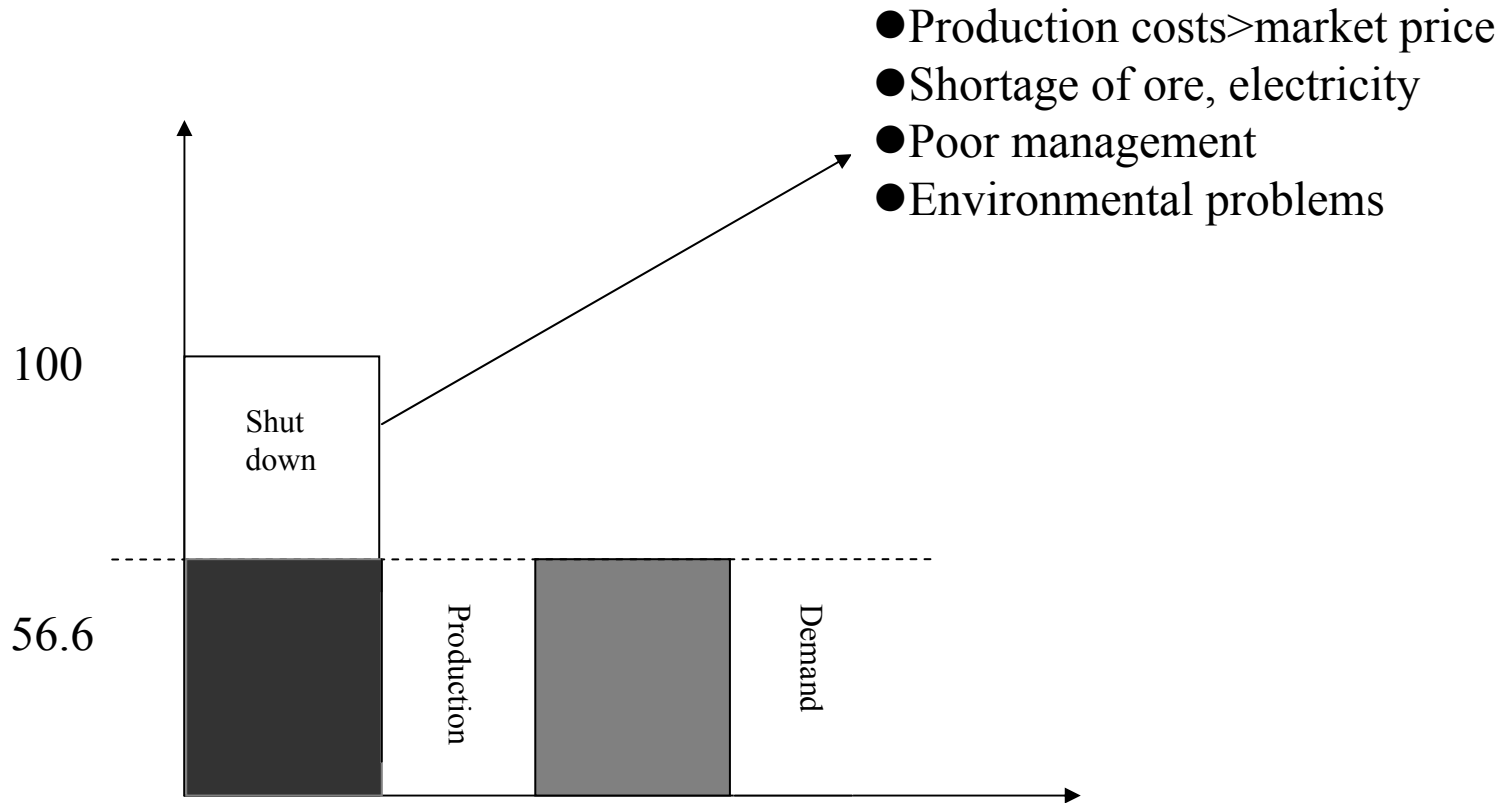
1、 Production Capacity in 2005

Mn	Chongqing Xiushan	200kt
Triangle	Hunan Huayuan	300kt
	Guizhou Songtao	120kt
Area	Guizhou Tongren	60kt
	Xiangxi、 Luxi、 Huaihua	80kt
	Guangxi	150kt
	Others	100kt
	Total	Around 1 million MT

•“Mn Triangle Area” is the major area for current environmental problems.

2、 Capacity and Production

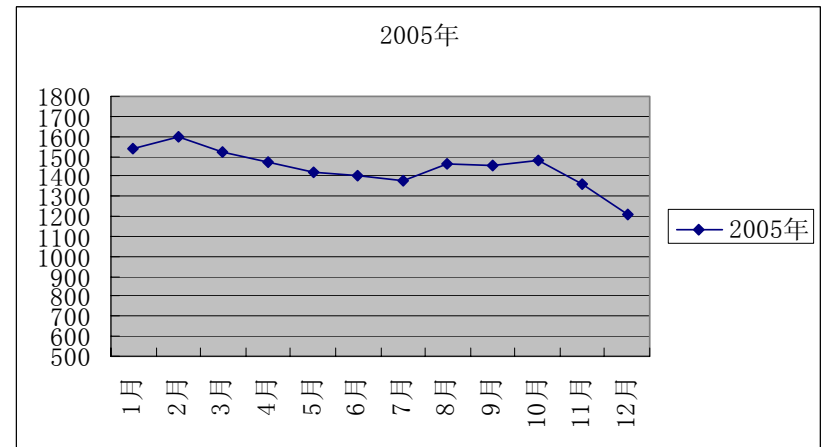
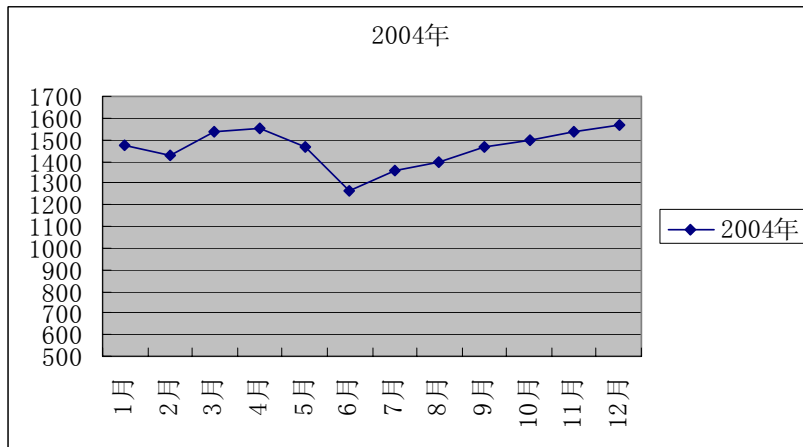
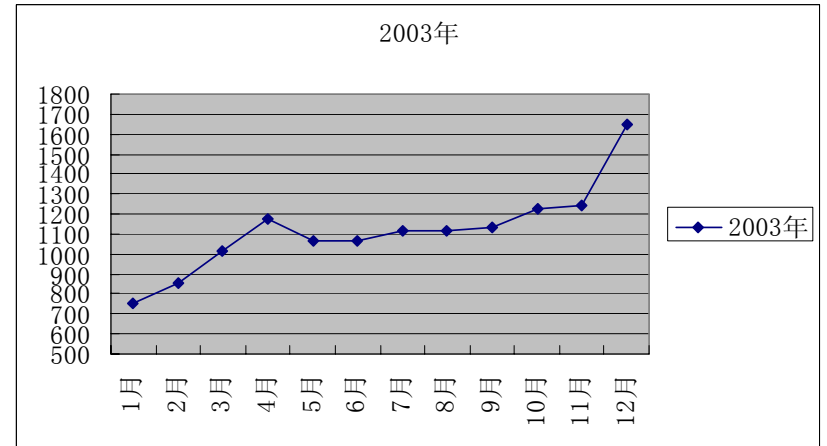
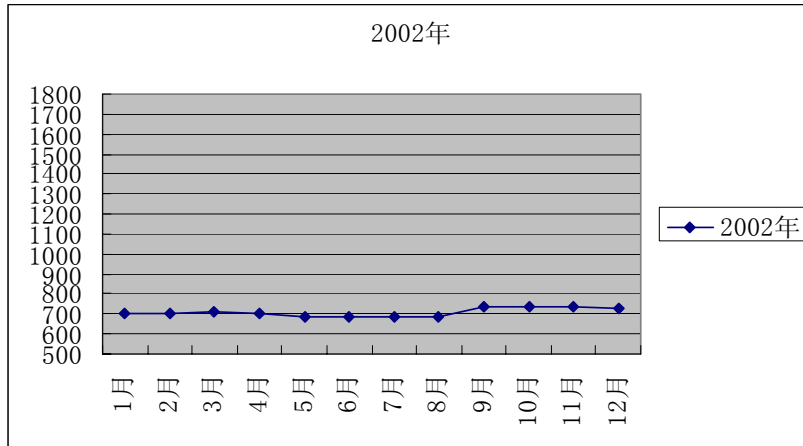
- China EMM production in 2005 was 566kt, however, the capacity was around 1 million tons, the production ratio was only 57%.



- Demand determines how much to produce. However, many factors may cause a shutdown: When production cost is higher than the market price is the key factor at present; before March 2005, shortage of electricity was the key factor, and this year the key factor will be environmental problems.
- New capacity will be released in 2006, following 2005 investments.
- Like the steel industry, Mn industry will start to restructure in 2006, with several Mn giants emerging over the coming years.

四、Market Analysis

1、EMM Price Evolution



- EMM price was very low in 2002, it increased sharply in 2003 and remained at a high level in 2004. In 2005, it started to drop.

2、 Market forecast for 2006:

EMM will still be in overcapacity in 2006. 55% of current capacity can satisfy the demand, other 45% have to shutdown. From H2 2005, production ratio kept around 57% due to environmental problems and poor market situation. Current market price is just about production costs. However, the demand of EMM in 2006 will be higher than that of 2005, affected by the environmental problem, RMB revaluation and possible export tax increase, EMM price will increase in the near future. Short-term shortage of EMM is also possible.

3、 How to face the future:

From 2003, driven by the development of 200 series stainless steel, EMM demand increased sharply year by year. In the coming years, steel industry will keep growing and quality of 200 series steel products will keep improving. These developments will further drive the demand for EMM.

In addition, EMM is now used in more sectors; EMM consumption in catalyst industry and battery industry will also increase.

Despite the increasing demand for EMM, the period of very high profits for EMM industry is over. The competition will be very strong. In order to enhance our competitiveness, we have to factor into our calendar technology innovation, equipment upgrade, energy saving and environmental protection. We have to carry out and fulfill the call on of the Central Government: “Build a resources efficient and clean society, paving the way to sustainable development.”