

# China air separation equipment market status and recent developments



## 1 Overview of domestic and international air separation market

As China's economy continues to grow steadily, China's air separation equipment manufacturing industry is gradually developing, especially in large air separation projects, the market share of domestic equipment is increasing year by year, and the situation that foreign companies dominate the world in large air separation projects is gradually changing. However, we should be fully aware that in large air separation equipment projects, our comprehensive capabilities and levels compared to major foreign companies, there is still a gap. In the world air separation equipment market, most of the annual share is divided by foreign companies. 1999 to 2002, the world air separation market sales performance of major companies are shown in the table below.

Note: 1, the figures of 2001 and 2002 are taken from the annual report published on the website of each company.

2. The unit is billion dollars, \* is billion euros.

3. The total sales listed in the table are not only for industrial gases and air separation equipment, but also for many other combined businesses, and the "share" is the share of industrial gases and air separation equipment. Therefore, this comparative analysis can only be used as a rough reference.

Most of these eight companies have supplied medium and large-sized air separation equipment to China, only Linde of Germany has supplied more than 50 sets of air separation equipment to China, while Air Liquide, BOC, Praxair and Messer have invested in several gas companies in China, only Messer has invested in 15 joint ventures in China by the end of 1999, with a total investment of 170 million USD. In addition, Air Liquide and Hangxiang established Air Liquide (Hangzhou) Co., Ltd. and Linde and Jin Chong established Linde Process Equipment Co., Ltd. which are mainly engaged in the manufacturing of air separation equipment.

Of course, China's air separation market is also a part of the world air separation market. Due to the original backward foundation, there is a big gap with foreign countries. After the reform and opening up, many large complete sets of equipment were introduced, especially the sustained economic growth after the 1990s, which promoted the increase of investment in large steel and chemical enterprises and further accelerated the introduction of large air separation equipment, thus promoting the further improvement of the overall level of domestic enterprises from supporting capacity to design, manufacturing, installation and operation management, and gradually forming a three-legged tripod with Hangxiao, Kai Air and Chuan Air as the core enterprises. The situation of the core enterprises Among them, Hangxiang accounted for about 68% of the domestic share in 2002, while the large equipment accounted for more than 70% of the domestic share, the total industrial output

value in 2002 reached 106.87 million yuan, and the sales revenue reached 105.61 million yuan; in the first half of 2003, there were more than ten sets of new orders for air separation above "20, 000" grade, and the professional equipment set a domestic record - "50, 000". In the first half of 2003, there were more than ten sets of new orders of "20, 000" grade air separation, and the professional equipment set a domestic record - "50, 000" air separation; Chuan Air is a latecomer, jumping to the second place in 2002, with total industrial output value of 403.19 million yuan and sales revenue of 363.78 million yuan. In the first half of 2003, there were 3 sets of air separation equipment of "20, 000" or above, and the professional equipment reached "28, 000". In 2002, the total industrial output value reached 256.48 million yuan, the sales revenue reached 257.77 million yuan, and the professional air separation equipment reached "40, 000". In addition, there are also small and medium-sized enterprises such as Ha oxygen, Su oxygen, Hand oxygen, Jiang oxygen, etc. occupy a small part of the air separation market share. Foreign enterprises Air Liquide (Hangzhou) and Linde Process Equipment Co., Ltd. have shown a gradual growth trend in recent years in the performance of large air separation equipment.

## 2 China Air Separation Market

At present, China's air separation market is: large total volume, small average volume, individual volume (single indicator) is not enough, and there is still some room for growth for sustained growth. Take Asia and Australia, the sum of oxygen production capacity in 2000 is about 200000t/d, of which China accounts for 35%, Japan accounts for 30%, South Korea accounts for 12.5%, China Taiwan accounts for 5%, Australia accounts for 4%, Malaysia accounts for 3%, Indonesia accounts for 3%, Thailand accounts for 2%, Singapore accounts for 1.5%, the other 4%. In terms of average volume, Japan is 4.5 times more than China. China's steel production is about 1.5 times of Japan's, but the oxygen production capacity is only 1.17 times of Japan's; from the individual volume, China's air separation is basically the production of oxygen, nitrogen and argon, while the production of high-purity nitrogen, helium and other rare gases is

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