

# Study on transformation and promotion of thermos cup (pot) industry in Jinhua

**Chu Junwei, Chen Yong, Li Yueqiao, Wang Xuewu, Li Yuedong, Ying Huijuan, Zhang Wei, Qi Gongwei, Zhou Jiabo, Ye Xiaojuan**

*Jinhua Academy of Metrology and Quality Science, Jinhua, China*

**Abstract:** *This paper studies on the general situation of the development of thermos cup (pot) industry in Jinhua and the development status of large enterprises in the local industry, this paper analyzes the problems existing in the industry, puts forward suggestions for industrial development in the future, and explores how to guide enterprises to produce high-quality thermos cup (pot) products and promote the transformation and promotion of the industry by building a completely industrial supporting system.*

**Keywords:** *thermos cup (pot) industry, transformation and promotion, support system*

## 1. Basic information

The thermos cup is a container containing liquid made of double-layer stainless steel after vacuum treatment. It has a cover on the top and is tightly sealed. The vacuum insulation layer can delay the heat dissipation of water and other liquids inside, so as to achieve the purpose of heat preservation. The thermos cup is developed from the thermos bottle. In order to be easy to use and carry, the same vacuum insulation principle is used to make a more miniaturized cup from the bottle. In the 1970s, Japan acerbitry Co., Ltd. used high vacuum technology to improve the double-layer stainless steel container. In 1979, it produced the world's first commercialized stainless steel double-layer high vacuum thermos, and began formal production and sales in 1981. Since then, stainless steel thermos has officially entered the consumer market, which has also brought epoch-making changes to the development of thermos. With the improvement of people's consumption awareness and the needs of daily life applications, stainless steel thermos cups with fall resistance, durability, safety, firmness, compactness and lightness are gradually favored by consumers, which also drives the further development of the thermos cup market.

In the early 1990s, China's stainless steel vacuum cup and kettle products began to start and develop in the domestic market. After joining the WTO, since 2008, domestic vacuum cup and kettle brands have entered the chain terminal stores of Wal Mart, Carrefour, Tesco, Metro, lotus, RT mart, agriculture, industry and commerce, etc. the stainless steel vacuum cup and kettle industry has ushered in new development opportunities, and the sales market and scale have expanded rapidly. With the continuous expansion of the global market scale of thermos cups and pots, the manufacturing process, technology, equipment and R & D and design level of China's thermos cups and pots industry have also been rapidly improved. In addition to demographic dividends, low land costs and low environmental costs, the international manufacturing center and procurement center of thermos cups and pots have gradually shifted from Japan, South Korea and Taiwan, China to Chinese Mainland. At the beginning of the 21st century, China has formed two major thermos cup and kettle industrial bases in Zhejiang Yongkang and Guangdong Chaoshan, of which Zhejiang Yongkang is the largest thermos cup and kettle manufacturing and purchasing center in China. According to customs statistics, in 2021, China's exports of thermos cups and kettles totaled US \$5.683 billion, a year-on-year increase of 25.09%. From the perspective of export destination countries and regions, the United States is China's largest export destination, with an export amount of \$2.041 billion, an increase of 20.30% year-on-year; The second largest export destination is the European Union, with an export amount of 822 million US dollars, an increase of 23.32% year-on-year; The third largest export destination is Japan, with an export amount of US \$583million, a year-on-year decrease of 8.69%. In terms of export provinces and cities, Zhejiang Province, Guangdong Province and Shanghai are the main export provinces and cities of China's thermos cup and kettle products, accounting for about 90.95% of the country's total exports. Among them, Zhejiang Province is the largest export province, with an export amount of 1.846 billion

US dollars, accounting for 80.84% of China's total export of thermos cups and pots, with a year-on-year increase of 25.29%; Guangdong Province is the second largest export province, with an export amount of \$464million, accounting for 11.46% of China's total export of thermos cups and pots, with a year-on-year increase of 21.24%; The third place is Shanghai, with an export amount of 319 million US dollars, accounting for 7.65% of China's total export of thermos cups and pots, with a year-on-year increase of 0.53%. From the perspective of export trade mode, general trade and incoming processing are the main two modes, accounting for 91.62% of China's total export volume of thermos cups and pots, and general trade mode accounts for 72.83% of the total export volume, with a year-on-year increase of 15.18%. The import processing trade accounted for 17.89% of the total export, with a year-on-year increase of 42.92%.

Jinhua thermos Cup (pot) industry started in the mid-1990s. After more than 30 years of development, it has gradually grown into a pillar industry of Jinhua metal products industry. There are two representative industries in Yongyi and Yongkang. According to statistics, the output value of Jinhua thermos cup (pot) industry in 2021 was about 27 billion yuan, and the output value has always maintained an increase of about 10 percentage in recent years, with nearly 150000 employees. It is the largest thermos cup production base in China and even the world. Yongkang was awarded the title of "China's Cup capital" by China Light Industry Federation.

According to incomplete statistics, there were 315 manufacturers of thermos cups in Yongkang and Wuyi in December 2021. The number of large and medium-sized enterprises has increased of 15 percentage and 8.15 percentage respectively according to last year, large and medium-sized enterprises account for 56.63 percentage in all enterprises; Micro enterprises accounted for 43.37 percentage in all enterprises. The output value of thermos cups in Yongwu area was 23.092 billion yuan in 2019, accounting for 75.67percentage of the total scale of the country. <sup>[1]</sup>

Three of the ten top international brands of thermos cups in jinhua (catering magician, pictorial Printing, tiger brand, HALS, Fuguang, lock&lock, Huaya, Sibao, Solidware and Xiongtai).

Zhejiang HALS vacuum Ware Co., Ltd., formerly known as Zhejiang HALS industry and Trade Co., Ltd., was established in May 1996. It is mainly engaged in the production and sales of stainless steel vacuum ware. They include thermos cup, automobile cup and other daily stainless steel vacuum ware.

Zhejiang Huaya cup Industry Co., Ltd., was founded in 2003, it is a production-oriented enterprise focusing on the domestic market and manufacturing of thermos cup. Over past decade, it has won high praise from customers and consumers by its cost-effective products, excellent quality, fast delivery ability and perfect service system.

XIONGTAI Group Co., Ltd. was Founded in May 2000, it has five wholly-owned subsidiaries. It is a medium and private enterprise integrating professional design, researching, manufacturing and marketing. It has set up Zhejiang Xiongtai cup Industry Co., Ltd., Zhejiang XIONGTAI Photovoltaic Technology Co., Ltd., Zhejiang XIONGTAI Investment Co., Ltd., Zhejiang Xiongtai real Estate Co., Ltd., Zhejiang Xiongtai import and Export Co., Ltd.

Due to the fact that thermos cups and pots are oriented to end consumers, with the development of economy and the improvement of people's consumption awareness, the public also tends to choose thermos cups and pots of well-known brands, such as internationally renowned "pictograph", "Chef", "tiger brand" and so on. These high-end well-known brands not only have obvious advantages in the use performance of thermos cups and pots, but also have prominent characteristics in product design, aesthetics, taste, environmental protection and other aspects, so they have also been favored by the majority of consumers.

Since the 1990s, with the gradual transfer of the international manufacturing center and procurement center of thermos pots to China, the thermos pot industry represented by Yongkang region came into being. At first, the production and export of thermos cups and pots were mainly OEM. Foreign brands put forward the structure, appearance and process requirements of products, and domestic manufacturers produced and processed them as required. With the expansion of the industrial scale, many enterprises began to design and develop their own products, which were selected by foreign brands and then placed orders for production. This production method is also called "ODM". Although the enterprises at this time have already had certain R & D capabilities and production technology, they ultimately stick to the brands of foreign brands and have not formed their own brands. With the improvement of the awareness of domestic independent brands, Jinhua thermos cup and kettle manufacturing enterprises have gradually increased the investment and operation of independent

brands. The leading enterprises of Jinhua thermos cups and pots represented by HALS, Xiongtai and Feijian have continuously improved their automation level, product quality and R & D and design ability by introducing advanced production and testing equipment and continuous investment in R & D and design, which has significantly improved their own manufacturing technology and R & D and design ability. On this basis, Jinhua region has also formed "HALS", "Xiongtai", "Feijian", "Nanlong" and other domestic well-known brands, especially "HALS" and "Xiongtai" are selected into China's top ten thermos cup brands.

In addition to the establishment of its own brand, Jinhua thermos cup and kettle manufacturing enterprises also open up the foreign market by directly acquiring foreign brands. For example, in 2016, HALS acquired Swiss "Sigg", a century old brand of international thermos cups, and in 2019, Jiayi acquired Migo, an American thermos cup brand, and went to sea by boat, embarking on the road of internationalization. At present, Jinhua thermos cup and kettle leading enterprises have a certain understanding of their own brand creation and positioning, most of which are positioned at the high-end, medium and high-end and middle-end. Through different positioning and customers, they can develop, produce and sell products of different grades, which is conducive to strengthening the construction of marketing network, expanding the scale of domestic sales, facing more consumer groups and building brand awareness. However, at present, domestic high-end brands are mainly foreign brands, and domestic independent brands have not yet formed core competitiveness in the high-end market. In addition to several leading enterprises, most enterprises in Jinhua are still in the stage of OEM and ODM, from OEM production to independent innovation and the development of independent brands. Jinhua thermos cup enterprises have a long way to go in brand building. <sup>[2]</sup>

## 2. Existing problems

First, thermos cup (pot) industry is affected by Covid-19 pneumonia. The external demand was extremely atrophy in the first half of 2021. It not only endangers the survival and development of foreign trade enterprises, but also affects the stability of supply chain in industrial chain. From January to June 2021, the sales of thermos cup (pot) of Xinduo cup industry decreased by 30 percentage to 40 percentage compared with the same period last year, the inventory of enterprise also increased, and the pressure of enterprise operating funds increased at the same time. Due to the epidemic prevention and control policy, a large number of migrant workers in Chongqing, Guizhou and Sichuan failed to arrive on time, and the local government failed to provide sufficient labor force. The problem of "difficult employment" of thermos cup (pot) enterprises was particularly prominent during the epidemic period.

Second, there is disorderly competition among enterprises. The technical content of thermos cup (pot) products is not high, but update speed of the product is very rapid, which leads to a high risk of product innovation investment. New products developed by enterprises at a large cost are easy to be imitated, copied and counterfeited by other enterprises, but the research cost invested by the enterprise itself. Therefore, under the condition of imperfect external institutional environment, especially in the market environment where intellectual property rights and patent system are not effectively protected, many enterprises usually do not choose independent innovation, but hope to become "free hitchhiker" of innovative products. However, for enterprises that choose independent innovation, the painstaking innovation will not get the due innovation profits, and the awareness of product innovation and the motivation to invent new products will gradually disappear. Therefore, while giving full play to the advantages of clusters, the risks of market periodicity and internal vicious competition will also increase at the same time.

Third, the degree of automation of manufacturing process is low. Traditional thermos cup manufacturing is a labor-intensive industry. A production line contains fifty-five processes need at least sixty employees, There are three hundred to four hundred employees and a medium-sized thermos cup manufacturing enterprise. Huaya cup industry believes that the lack of intelligent and information-based development planning, the shortage of funds, and the wide variety of thermos cup (pot) products, unstable output and large staff liquidity make it difficult to improve the automation of the manufacturing process.

Fourth, there is a serious shortage of professionals. The development of enterprises depends on talents. As the thermos cup (pot) industry is a hardware processing and manufacturing industry, Jinhua thermos cup (pot) enterprises are mostly concentrated in towns or villages. The difficulty of recruiting professional talents increased quickly because of the nature of work, working place and working environment. Production enterprises lack of corresponding professionals, especially in industrial

design, marketing network construction, brand planning and operation.

Fifth, the China-U.S. trade war leads to industrial transfer. The United States is the largest exporter of China's thermos cup (pot) products. The U.S. government implements trade protectionism and imposes 25% tariffs on Chinese goods. In addition, the rising domestic labor cost leads to the transfer of thermos cup (pot) industry from China to Vietnam, India, Turkey, Thailand and other countries. The transfer of thermos cup (pot) industry will pose a great threat to the development of domestic industry.

### 3. Suggestion

First, enterprises should improve the brand standard and open the double cycle at home and abroad. At a time of increasing uncertainties in the international environment, we should build a new development pattern with the domestic big cycle as the main body and the domestic and international double cycles promoting each other, so as to ensure economic security and expand the space for economic development. Improve the standard system of thermos cup (pot) and connect with international standards to facilitate foreign trade enterprises to turn to the domestic market. It can not only consolidate and improve the position of thermos cup (pot) in the global industrial chain supply chain, but also enable people to enjoy high-quality products at home, so as to bring a "win-win" situation of stabilizing foreign trade and promoting consumption.

Second, the government should strengthen supervision and curb disorderly industrial competition. Under the leadership of Jinhua market supervision and Administration Bureau, establish municipal industry associations, strengthen industry self-discipline and management, give full play to the leading role of industry associations, actively cooperate with the market supervision and administration department, carry out special actions focusing on combating fake and shoddy products, and use the dual means of competent department management and industry internal self-discipline, eliminate backward processes and subjects, and purify the business environment of the industry, Standardize the business order of the industry.

Formulate the medium and long-term quality brand improvement plan of thermos cup and kettle products, implement the special action of brand building, encourage enterprises to clarify their brand positioning, formulate detailed brand development plans around the whole process from R & D and design, manufacturing and processing to quality management, marketing and after-sales service, and build an advanced management system in line with the status of enterprises. Specifically, it includes: guiding enterprises of thermos cups and pots to develop and produce diversified and high-end products to better meet the needs of the market and consumers at all levels. In terms of product research and development, it provides enterprises with convenient services with reference value such as market data, analysis and prediction, and helps enterprises of thermos cups and pots improve their market competitiveness. Encourage the enterprises of thermos cups and pots to apply for national and provincial high-tech enterprises, and give policy, fiscal and tax, talent introduction and other incentive support to the newly recognized national and provincial high-tech enterprises. Support a number of high-quality professional and technical service institutions such as brand cultivation, evaluation and operation, introduce and cultivate a number of influential brand design and creative centers and advertising service institutions, and provide convenient services for the communication and cooperation between the above institutions and enterprises. Organize enterprises to actively participate in the "pinzibiao" brand training camp, reward and publicize enterprises that have won the "pinzibiao", and promote enterprises to establish brand concept. Actively hold and encourage enterprises to participate in major product exchanges and brand publicity activities such as the International Hardware Expo and the international commodity Expo. Organize and encourage enterprises to participate in various training sessions related to intellectual property declaration and protection, and guide and encourage enterprises to conduct trademark registration and intellectual property declaration in international, national intellectual property organizations or overseas national intellectual property organizations. Actively organize and encourage enterprises to enter "jd.com", "tmall" and other well-known e-commerce, organize thermos cup enterprises to establish a special "thermos cup e-commerce platform", and create a globally influential "thermos cup e-commerce platform" that integrates product publicity, sales, after-sales and other services, so as to improve product market share and brand awareness. Support cross-border mergers, and give certain financial incentives to enterprises that complete the mergers and acquisitions of transnational well-known brands and enterprises. Actively explore and establish the collective trademark of "Jinhua thermos cup pot". Through the registration and use of the collective trademark, it is conducive to the combination of small and medium-sized enterprises, promote their intensive management, form a competitive sales channel in the

market, facilitate the publicity of products and trademarks, and promote large-scale operation.

Intellectual property is the core element that affects the expansion and strengthening of enterprises. In the face of infringement in industrial clusters, we should establish a perfect intellectual property protection mechanism to avoid vicious competition, specifically including: establish a "Thermos Pot intellectual property trading platform", through which we can realize the rapid inquiry and trading of intellectual property in China and avoid mutual infringement. Actively create "intellectual property litigation and mediation mechanism", and simplify the litigation process and reduce the litigation time through litigation mediation in case of patent and trademark infringement, so as to reduce time and human and material costs. Actively introduce domestic first-class intellectual property law firms, and provide advice on patent and trademark registration, litigation and other issues for thermos bottle enterprises in Jinhua region by introducing intellectual property law firms and setting up resident offices.

Third, enterprises should vigorously promote the replacement of machines and improve production efficiency. Take the provincial pilot demonstration of machine replacement in the thermos cup (pot) industry as the starting point, and comprehensively promote the development and implementation of "machine replacement" in the thermos cup (pot) industry. The government should take the leading enterprises as the pilot and create a demonstration enterprise of "machine replacement" in the thermos cup (pot) industry, and enterprises promote the application of advanced technologies such as automatic production and industrial Internet of things in other thermos cup and pot enterprises, so as to promote the expansion of "machine replacement" from slogan to practice, from simple application to in-depth implementation, and from a single enterprise to the whole industry. In view of the similarity of the production process of thermos cup (pot) enterprises, the government and thermos cup (pot) industry association will take the lead to create a "machine replacement" research center in the thermos cup (pot) industry, and strive to develop specially intelligent manufacturing equipment and technology such as thermos cup (pot) specially intelligent equipment, specially industrial robot and specially automatic flexible assembly line. Enterprises can improve the intelligent level of product production process, management and service, in order to reduce the investment cost of "machine replacement" of thermos cup (pot) enterprises.

Government departments provide policy and economic incentives and guidance. Guide and encourage enterprises to increase R & D investment in the transformation of backward production methods and the development of new products, and provide policy support and financial assistance to small and medium-sized scientific and technological enterprises and entrepreneurs. Specifically, the application and payment of innovation coupons can be used to carry out innovation activities relying on the designated innovation carrier, so as to reduce the economic pressure of enterprise innovation and R & D. Accelerate the construction of scientific research institutions and public innovation platforms, and build a number of scientific and technological innovation platforms. Introduce and build research and development institutions, innovate complexes, encourage leading enterprises to cooperate with scientific research institutes and universities to establish high-level innovation platforms such as enterprise research institutes and post doctoral workstations, and promote the research and development of key common technologies.

Comprehensively promote the development and implementation of "machine replacement" in the thermos cup and kettle industry. Take the leading enterprises as the pilot, create a demonstration enterprise of "machine replacement" in the thermos pot industry, and promote the application of advanced technologies such as automated production and industrial Internet of things in other Thermos Pot enterprises, so as to promote the expansion of "machine replacement" from slogan to practice, from simple application to in-depth implementation, and from a single enterprise to the whole industry. In view of the similarity of the production process of thermos cup and kettle enterprises, the government and thermos cup and kettle Industry Association will take the lead to create a "machine replacement" R & D center in the thermos cup and kettle industry, and focus on the development of special intelligent manufacturing equipment and technology such as thermos cup and kettle intelligent special equipment, special industrial robots, special automatic flexible assembly lines and so on. Overall planning, while improving the intelligent level of product production process, management, service, etc., reduce the investment cost of "machine replacement" of thermos cup enterprises. Further promote the integration of "two modernizations" of enterprises. Take the lead of Yongkang and Wuyi to create a demonstration area for the integration of "two modernizations" of thermos cups and pots, and develop public information services such as product design, manufacturing and processing, quality inspection, e-commerce, after-sales service, etc. We will promote leading enterprises to carry out the pilot implementation of the national "two modernizations" in-depth integration management system, and

cultivate a number of "two modernizations" integration demonstration benchmark enterprises in the thermos cup and kettle industry. Promote the transformation of informatization of Enterprises above Designated Size from basic application, single application and simple application to comprehensive application, integrated application and innovative application. Build a public information service network platform for small, medium-sized and micro enterprises, and promote the information application of small, medium-sized and micro enterprises. Promote the integrated development of "Internet +" in the industry, implement the "Internet +" action in the thermos pot industry, promote the integrated application of Internet of things, cloud computing, big data and other technologies in the thermos pot industry, carry out a number of "Internet +" collaborative manufacturing projects, and improve the application rate of ERP, MES, PLM and other enterprise management systems in key enterprises and Longtou enterprises. Improve the application coverage of e-commerce, strive for the penetration of e-commerce platform in product design, R & D, manufacturing, marketing, after-sales service and other fields, fully consider the dynamic needs of consumers in product design, research, manufacturing and other stages, promote the reform of production mode, and form a new mode of personalized customization and flexible production. Build a cloud service platform for the thermos cup and kettle industry, promote the exploration and innovation of the business model of the thermos cup and kettle industry based on "Internet +", promote the cooperation between e-commerce, logistics and manufacturing enterprises in the thermos cup and kettle industry based on "Internet +", and promote the sharing of resources such as data management, product services, R & D and design of common technologies.

Fourth, enterprises should implement the talent development strategy. Enterprises Strengthen cooperation with local universities such as Zhejiang Normal University, and effectively promote the talent training mechanism of the combination of industry. Universities set up industry customized classes to solve the employment problems of college students and the reserve of enterprise talents and skilled workers. Through the way of enterprise engineers go to study in universities and college students go to work in enterprises, the combination of production and education can promote the cultivation of enterprise talent echelon. The government should introduce the talent introduction policy and create a good environment for attracting and retaining talents.

Strengthen the introduction of professionals, improve the talent introduction policy, connect with the "25 new talent policies" of Zhejiang Province, and actively introduce high-end talents such as experts in the field of thermos bottle industry, leading innovation and entrepreneurship teams, and overseas engineers through the "Qianjiang talent plan", "thousand talents plan", "double dragon plan" and other talent introduction policies. The government will give full play to its service function, implement the settlement of introduced talents and the settlement, employment and schooling of their spouses and children, and create a good environment to attract and retain talents. In addition to organizing large-scale comprehensive talent recruitment fairs and closed talks for middle and senior talents, the government can jointly organize specialized talent recruitment activities in professional fields related to the thermos pot industry with the thermos pot industry association, so as to make the introduction and recruitment of enterprises more targeted.

We should strengthen the cooperation with local colleges and universities, scientific research institutions and vocational schools, and effectively promote the talent training mechanism of combining production and education. Enterprises set up customized classes in Colleges and vocational schools according to the actual production of their own products, which can simultaneously solve the employment problems of college students and the problems of enterprise talents and skilled workers. Through the way that enterprise engineers enter universities, colleges or vocational schools, students enter enterprises, the combination of production and education, and the mentoring of new and old students (Engineers), we can promote the cultivation of enterprise talent echelons.

We should cultivate the quality of entrepreneurs and the management talent echelon, strengthen the quality training and ability improvement of entrepreneurs, improve the entrepreneur service system, and establish a long-term mechanism to serve entrepreneurs. To strengthen the cooperation between enterprise managers and colleges and universities in economics, management and other majors, we can set up a special discussion forum and training meeting on enterprise management of thermos pots. Through the way that enterprise managers enter the classroom and college professors and experts enter the enterprise, we can combine production and education, promote the professionalization of enterprise management talents, and provide assistance for the future management talent reserve of enterprises.

Implement the "Baibo into enterprises" policy, and the government and enterprises jointly formulate relevant policies and attraction conditions, and carry out the "Baibo into enterprises" activity for enterprises related to thermos cups and pots. The government and the thermos cup and kettle Enterprise

Association took the lead in creating a "Baibo enterprise" network platform, on which enterprises publish the needs of design, manufacturing, management and other aspects. Doctors and experts from local universities and scientific research institutes contact enterprises to cooperate according to their own strengths, establish "part-time doctors", "weekend doctors", "holiday doctors" and other cooperation modes, and open up the circulation channels of talents between enterprises and universities. Leading enterprises and leading enterprises in the thermos cup and kettle industry are encouraged to establish post doctoral mobile (work) stations and graduate research and training bases.

#### **4. Conclusions**

Through study of the development status and existing problems of the thermos cup (pot) industry, this paper puts forward an industrial transformation and upgrading scheme with government supervision and enterprise innovation for the first time, which can provide a direction for the development of the thermos cup (pot) industry, improve the core competitiveness of the industry ,effectively guide the technological upgrading of the thermos cup (pot) enterprises and establish a new industry image. It is good to build a global production base of medium and high-end thermos cup (pot) and boost the high-quality development of thermos cup (pot) industry for Jinhua.

#### **References**

- [1] *Ou Yang bo, Xu Chongyi, Hu Yuchao Mileage "Cup" [M]. Beijing: China Light Industry Press, 2019.*
- [2] *Chen Xiaoling, Quality of thermos cup and kettle industry Development analysis and counter measure Report [M]. Hangzhou: Hangzhou Shangliang Standardization Management Technology Consulting Co., Ltd., 2018*