

Current Development of Japanese Fastener Industry - Operational Strategy (Part 2)

日本紧固件业发展趋势(二)-营运策略篇

Foreword

In the previous article, it was mentioned that Japanese fastener industry has been facing the impacts of global political & economic turmoil, rising costs and intensified market competition, and has been improving its average unit price and competitiveness through the strategy of high value-added products for years. Therefore, this article focuses on the analysis of changes in the unit prices of Japan's imports and exports in recent years, and the comparison of unit prices with those of its competing countries as a starting point for exploring the operation model of Japanese fastener industry, its potential application markets, and the strategies for dealing with the industry in the future.

Trend Analysis of Japan's Import and Export Unit Prices in the Global Fastener Market

a. Comparison of the Unit Price of Japan's Fastener Imports with Other Countries

Table 1 is a comparison of Japan's fastener imports with other countries in 2019-2023. In terms of the unit prices of the world's top 10 fastener importing countries, only Germany (US\$5.21/kg), China (US\$11.65/kg), France (US\$6.10/kg), and the UK (US\$5.58/kg) were higher than US\$5.0/kg, and the imported unit prices of the rest were all under US\$5.0/kg, which can be used as a reference

benchmark for defining the unit price level. Low-end fasteners were still the mainstream of market imports. China's import unit price was significantly higher than those of Germany, France and the UK, which could be translated into the fact that China still relied on imports fasteners with high unit prices. Germany, France, the UK maintained their unit prices of imports in a similar range, and the unit prices of imports of the U.S., Germany, the UK, France, Canada and many countries in recent years have also increased, except for the Netherlands, whose unit price of imports appeared a significant decline in 2023, which should be driven by its increased demand for low- and medium end construction fasteners.

Japan was the world's 17th largest fastener importer. The unit price of Japanese imports in 2023 was US\$3.91/kg, close to Taiwan's export unit price (US\$3.73/kg). The fastener supply and demand relationship between Taiwan and Japan was stable, and the average unit price of Japan's imports was not high, mainly because Japan was self-sufficient in the domestic market of medium- and high-end fasteners, and should maintain the competitiveness of domestic manufacturing of medium- and high-end fasteners for self-production and self-sale; In addition, although the fastener import volume of Taiwan, the world's 40th largest importer, was not high, it is worth noting that the unit price of fasteners imported by Taiwan (US\$9.76/kg) was close to that of China (US\$11.65/kg). Compared with Europe and the US, there is still import demand for high-end fasteners in Taiwan. The import unit price of such level (US\$9.76/kg) makes Taiwan still a market where Japanese fastener suppliers can strengthen economic & trade relations and technical cooperation with.

Table 1. Comparison of the Unit Price of Japan's Fastener Imports with Other Countries in 2019-2023

Unit: US\$/kg;%

Ranking	Country	2019	2020	2021	2022	2023	CAGR
1	USA	3.57	3.45	3.79	4.16	4.15	3.9%
2	Germany	4.30	4.24	4.50	4.69	5.21	4.9%
3	Mexico	N/A	N/A	3.24	3.54	2.72	-8.4%
4	China	N/A	N/A	N/A	10.65	11.65	0.9%
5	France	4.91	4.99	5.08	5.50	6.10	5.6%
6	Canada	0.81	0.86	1.05	1.23	1.07	7.2%
7	UK	4.36	4.47	4.51	5.02	5.58	6.4%
8	Poland	3.65	3.66	3.64	3.91	4.10	3.0%
9	Italy	3.70	3.73	4.21	3.70	3.71	0.0%
10	Netherlands	4.24	4.29	4.66	3.76	2.17	-15.4%
17	Japan	3.61	3.53	3.71	3.98	3.91	2.0%
40	Taiwan	8.75	9.45	10.05	10.09	9.76	2.8%

Source: ITC

Table 2. Comparison of the Unit Price of Japan's Fastener Exports with Other Countries in 2019-2023

Unit: US\$/kg;%

Ranking	Country	2019	2020	2021	2022	2023	CAGR
1	China	2.03	2.28	2.47	2.82	2.36	3.8%
2	Germany	7.25	7.51	7.95	8.10	8.84	5.1%
3	USA	6.00	6.22	7.06	8.75	8.72	9.8%
4	Taiwan	2.92	2.93	3.31	3.81	3.73	6.3%
5	Italy	4.49	4.85	5.07	5.00	5.03	6.3%
6	Japan	8.23	8.58	8.51	8.02	7.99	-0.7%
7	France	9.33	8.82	9.42	9.55	10.84	3.8%
8	UK	10.79	12.28	14.71	16.47	20.36	18.3%
9	S. Korea	4.30	4.38	4.54	4.79	5.09	4.3%
10	Netherlands	4.57	4.89	4.87	3.87	5.78	6.0%

Source: ITC

b. Comparison of the Unit Price of Japan's Fastener with Other Countries

Table 2 is a comparison of the unit price of Japan's fastener exports with other countries in 2019-2023. In terms of the unit prices of the top 10 fastener exporting countries, the export unit prices of the UK (US\$20.36/kg), France (US\$10.85/kg), Germany (US\$8.84/kg), the US (US\$8.72/kg), and Japan (US\$7.99/kg) were on the high side, while China and Taiwan were ranked as the 1st and the 4th largest exporters in the world. However, the unit prices of fasteners exported from China and Taiwan were on the low side compared to the other top 10 exporting countries (US\$2.36/kg from China and US\$3.73/kg from Taiwan). The fasteners from China and Taiwan accounted for about 30% of the global fastener exports, indicating that China and Taiwan were still the main fastener suppliers at the unit price level of US\$2.0~4.0/kg. Fasteners with the unit price level of US\$7.0~9.0/kg accounted for more than 30% of the global exports, and fasteners with the unit price level of US\$10.0~20.0/kg accounted for about 5.0~6.0% of the global exports. China and Taiwan in developing higher quality (value) of fasteners still showed a significant gap from Europe, the US, and Japan, a market where Japanese fastener industry can tap into.

In 2023, the unit price of Japan's fastener exports was US\$7.99/kg, and the CAGR in recent years showed a slight decline. Japanese fastener industry is facing quality competition from high-end fasteners in Europe and the U.S., and low-price competition from medium-to-low-end fasteners in China and Taiwan, and is in urgent need of business strategy transformation; as the world's 4th largest exporter, Taiwan's export unit price was about 3.73 US\$/kg, and the CAGR of its 5-year export unit prices was about 6.3%, which should be the effects of the U.S. shifting the original procurement of fasteners from China to Taiwan and the effectiveness of Taiwan's transformation and upgrading to high value-added fasteners.





Future Challenges to the Operation Model of Japanese Fastener Industry

a. Current Status of Japanese Fastener Industry

Japan was the world's 6th largest fastener exporter, with an export value of US\$2.386 billion and an export volume of 298,400 tons in 2023. It demonstrates a market-leading position, especially in the areas of high-end fasteners, covering automotive, aerospace, construction, electronics and other applications, which are greatly related to the Japanese manufacturing industry. In terms of production value and export, Japanese fastener industry has an annual production value of about 500 billion yens, with exports accounting for more than 30% of its production, mainly exported to China, Europe and N. America, and the remaining 70% sold to the domestic market; high-quality and precision are the core advantages of Japan's exported fasteners, especially in the aerospace and high-end automotive fields with strong demand.

b. Current Operation Model of Japanese Fastener Manufacturers

As the market for Japanese fasteners is gradually being challenged by competitors, in response to the growing demand from developing countries in the Asia-Pacific region, Japanese fastener manufacturers have stepped up their efforts to open up overseas markets by setting up production bases in Southeast Asia and other regions in order to reduce costs and respond to local customers' needs. Japanese large fastener manufacturers still have the strength to dominate the market for high value-added products, and SMEs account for about 90% of the number of Japanese fastener manufacturers. The order flexibility and efficient production are their core competitive edges, and the division of labor in the supply chains is quite complete. Known for their durability, precision, and reliable quality, Japanese fasteners meet the stringent requirements of the global high-end market. Their manufacturers are continuously investing in advanced technologies such as corrosion-resistant steels, lightweight materials, high-temperature-resistant fasteners, and high-strength structural fasteners.

In terms of digital transformation, Japanese fastener manufacturers have adopted the IIoT platform for real-time monitoring and maintenance of production equipment to reduce the risk of downtime, and are utilizing measures such as the introduction of AI into smart manufacturing for supply chain analyses and management.

In terms of energy saving and carbon reduction, Japanese fastener industry has been investing in green manufacturing for years in response to the global carbon reduction and environmental protection, such as adopting recyclable materials and low energy consuming manufacturing processes to reduce carbon emissions in order to comply with international environmental regulations, and utilizing water-based coatings and low-pollution technologies in manufacturing to realize environmental protection and carbon reduction.

c. Japanese Government's Support Policy for the Fastener Industry

Japanese government actively promotes fastener SMEs to carry out digital transformation, provides subsidies and technical support to help Japanese fastener industry enhance international competitiveness, supports R&D of innovative technologies, injects resources especially into material upgrading, intelligence, automation and other aspects. It also collaborates with Fastener Institute of Japan (FIJ) to provide a platform for fastener industry exchanges, promotes the industry standardization and international cooperation, and supports Japanese fastener companies to participate in international exhibitions to increase the global visibility of their brands.

d. Japanese Government's Support Strategy for Carbon Emission Trends and Fastener Industry Sectors

The Ministry of Economy, Trade and Industry (METI) of Japan created a "Carbon Credit Market" in August 2021 and conducted a study in 2022 to set up a carbon trading market for encouraging enterprises to set voluntary emission reduction targets and promoting enterprises to make investments in carbon reduction. In addition, METI announced the goal of "Zero Carbon Emission by 2050" in December 2020, and selected 14 critical fields for "Carbon Neutral Green Growth Strategy". Below are the industries involved with fastener demand:

i. Offshore Wind Power, Solar Energy, Geothermal: demand for fasteners used in offshore wind turbines, solar energy, and geothermal related facilities.

ii. Nuclear Energy: Promote Japanese companies to become the main member of the Small Modular Range (SMR) International Collaboration Program, and promote the popularization of SMRs to generate the demand for fasteners.

iii. EV and Batteries: From 2035, Japan will restrict the sale of non-electric small passenger vehicles, facilitating demand for fasteners for all types of small commercial EV, large commercial EV, automotive batteries (incl. multi-functional screws, sealers & nuts, washer assemblies, or smart fasteners with high torque and tear strength in carbon fiber materials), and fast charging stations and hydrogen charging stations.

iv. Marine: Requirements for fasteners related to LNG-fueled vessels and wind propulsion systems.

v. Infrastructure: demand for fasteners used in infrastructure (e.g., harbors) related to various foreign green energy imports.

vi. New Aircraft: Demand for fasteners for hydrogen-powered aircraft batteries & engines, hydrogen supply chains, and the construction of hydrogen refueling equipment.

vii. Green Building and New-Generation Solar Power: Demand for fasteners for green residential buildings, solar power generation facilities, and new-generation solar (calcium titanium ore) power generation facilities.

Potential Markets and Strategies for Japanese Fastener Industry

a. High-end Market Trends and Strategies

Since the low-end Japanese fastener industry could barely compete with the economy of scale in China, the development of high-end fasteners and stabilizing its position as the world's high-end fastener supplier has become an important issue. Japanese fasteners in the high-end market have already gained a technological advantage, and the competitive edge of materials allows them to develop high-price superalloy fasteners. Superalloys

refer to nickel-based, iron-based and cobalt-based alloys that contain Cr to increase resistance to high-temperature oxidation and corrosion, and other elements to increase high-temperature strength and age-hardening, etc. Nickel-based superalloys have the best high-temperature mechanical properties and high strength and oxidation-resistant properties at high temperatures.

Rivets, bolts, screws and nuts made of various superalloys are mainly used in: energy generation (bolts/blades/waste gas reheaters/discs/shafts/rings), defense & aerospace (discs/bolts/shafts/housings/blades/wings/combustion drums/afterburners/reverse thrust devices), automotive (exhaust valves/turbochargers/engine fasteners), electronics (casting molds/heat treatment molds), medical (dental fillings), metal processing (vacuum tubes/electronic components), etc.

b. Medium-to-low-end Market Trends and Strategies

Facing the competition from China, S. Korea and other countries, the situation of the markets of their medium-to-low-end fasteners being taken by competitors, coupled with the increased fluctuations in raw material costs (especially steel and alloy) which cannot be passed onto the sales prices of products as only about 30% of their customers are willing to accept price increase, Japanese fastener suppliers have reported sharp profit decline. Accordingly, manufacturers may evaluate the establishment of an industry-level team of multiple players supported by resources from the Japanese government to avoid the waste of resources, and also integrate the strengths of different industries and government resources to solve the current predicament of the medium- and low-end markets and consolidate the development of Japan's next-generation fastener industry.

In addition, various types of fasteners in the construction industry still account for a certain demand, and construction fasteners are the mainstream of the post-epidemic period, including steel structural bolts, wood screws, gypsum board screws, expansion anchor bolts, chemical anchor bolts, drop-in anchors, cut anchors, etc. Fasteners with CE certification are still competitive in the market; in terms of human resources, Japan is facing the problem of aging and labor shortage limiting the potential of industrial development, and the cultivation of its new-generation human resource needs more support.

Conclusion

The global green economy transformation has driven the demand for related fasteners, and there are considerable opportunities for Japanese fastener industry. In terms of products, it can seize the opportunity of the post-epidemic era and the replacement of fasteners caused by different consumption patterns, and lay the groundwork in advance to cut into the market for new products; in terms of trade, Japan can take advantage of its own tariff advantage in the CPTPP and RCEP systems to lay out its global position. In particular, in the RCEP led by China, the tariff removal rate averages about 91.5%, which will cause less impact on Japan due to the U.S.-China trade war; in terms of distribution, Japanese fastener industry can also learn from Taiwan's mergers and acquisitions of mature foreign sales channels. Through the advantage of the marketing network, Japanese suppliers can promote products to the global market, and cope with industrial challenges in the fast-changing global political and economic situation. ■

