2021 Looks Bright for Chinese Automotive Fastener Market

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In the world's downstream industries, fasteners are mainly used in automobile, electronics, construction and maintenance. The automotive industry is the largest fastener user demanding 23.2% of global fasteners. The industrial maintenance market and construction industry follow and take up 20% of the total. The electronics industry comes in third and takes up 16.6%. Thanks to a strong manufacturing base and improved technical capability, nearly 60% of China's products have increased capacity in a nation-wide statistics of sizable industries. Better control of corporate costs and a reform in the supply chain have brought the benefit of increased income and lower costs.

Status of Chinese Automotive Market in 2020

1. Passenger Cars Continued Reduction and Commercial Cars Increased Against the Backdrop

In 2020 19.99 million passenger cars were manufactured and 20.17 million passenger cars were sold, down 6.5% and 6% respectively. The drop shrank 2.7 and 3.6 percentage points respectively over 2019. Passenger car production and sales respectively took up 79.3% and 79.7% of all car types, down 3.7 and 3.5 percentage points respectively over 2019. In all four types of cars, sedans production and sales dropped by 10% and 9.9% respectively; SUVs grew by 0.1% and 0.7% respectively, surpassing sedans for the first time; MPVs dropped by 26.8% and 23.8% respectively; crossover passenger cars dropped by 1.7% and 2.9% respectively.

In 2020, replacement of cars pertaining to China's Ⅲ Vehicle Emission Standards, government rectification on overloaded passenger cars, as well as the demand for infrastructure, boosted commercial car production and sales for the whole year. In 2020, 5.23 million commercial cars were manufactured and 5.13 million commercial cars were sold, up 20.0% and 18.7% respectively and setting a new record by breaching 5 million for the first time. Commercial car production increased by 18.1 percentage points, and sales growth turned from negative to positive.

In all car types, trucks are the mainstay of commercial car growth. 4.77 million trucks were manufactured and 4.68 million trucks were sold, up 22.9% and 21.7% respectively. 453 thousand passenger cars were manufactured and 448 thousand passenger cars were sold, down 4.2% and 5.6% respectively.

2. Annual New Energy Car Sales Set a New Record

With years of development in the supply chain of new energy cars, the industry has gradually grown mature in every aspect. Various and diversified new energy cars continue to satisfy market demand and user-oriented environment is being optimized and improved. With theses

measures, new energy cars are gaining more recognition from consumers. In 2020, 1.366 million new energy cars were manufactured and 1.367 million new energy cars were sold, up 7.5% and 10.9% respectively, and sales growth turned from negative to positive.

1.10 million pure electric vehicles were manufactured and 1.11 million of them were sold, up 5.4% and 11.6% respectively. 260 thousand plug-in hybrid electric vehicles were manufactured and 251 thousand of them were sold, up 18.5% and 8.4% respectively. 1 thousand fuel cell vehicles were both manufactured and sold, down 57.5% and 56.8% respectively. According to China Association of Automobile Manufacturers, new energy car sales took up 5.4% of the nation's total car sales in 2020, up 4.7% (7 percentage points) from 2019. New energy cars are steadily gaining traction.

3. Decreased Annual Automotive Export Volume

The COVID pandemic overseas resulted in decreased automotive export in 2020. The whole year saw 995 thousand vehicles exported from China's automotive industry, down 2.9%. In car type, 760 thousand passenger cars were exported, up 4.8%; 235 thousand commercial cars were exported, down 21.4%.

4. Decreased Annual Market Shares of Branded Passenger Cars

According to China Association of Automobile Manufacturers, market shares of branded passenger cars had been declining since 2017 to 38.1% in 2020. The drop was 2.9% in 2019 and shrunk to 1.1% in 2020. In the Chinese automotive market in 2020, except for Japanese and American brands with increased market shares, brands from China, Germany, South Korea and France witnessed a certain degree of decline. Regarding their future development, Japanese brands have a chance to surpass German brands to be the second largest car brand in China.

5. Reduced Market Concentration of Top 10 Automakers

In 2020, the top 10 automakers' sales totaled 22.64 million vehicles, down 2.3%, taking up 89.65% of total vehicle sales, 0.4 percentage points lower than 2019.

Of the 10 largest automakers, SAIC remained as the top player selling 5.53 million units of vehicles in 2020, down 11.5% from 2019. SAIC, Chang'an Automobile, Great Wall Motor and Brilliance Auto exhibited growth in contrast to other automakers with decreased sales.

Spacious Chinese Automotive Fastener Market in 2021

Highlight 1: A huge fastener market

China kicked off 2021 with a good start in January this year where the main indicators such as new and second-hand car registration as well as scrapped car recollection rates

exhibited significant growth. The car production and sales of January 2021 increased around 30%. The total car production and sales in China were 2.38 million and 2.50 million vehicles respectively, up 34.6% and 29.5%. Among them, new energy cars stuck out with 194 thousand vehicles produced and 179 thousand vehicles sold, up 290% and 240%. Overall, the Chinese car production and sales were stable with a good start to kick off 2021 and huge growth in main indicators.

In the automotive manufacturing market, automotive fasteners can be used on virtually every sub-system, including engines, suspensions, chassis, airbags, and ABS.

In 2020, the COVID pandemic pressed the pause button on the automotive industry. All industries were on the same boat taking the challenge in the midst of the massive impact. China pushed for work/production resumption, sped up altering our marketing, and stimulated car purchase. The automotive market was on gradual recovery with steadily accelerated yet reduced annual sales, and was fundamentally free from the pandemic impact. The automotive industry on the whole exhibited robust endurance and inner momentum. In 2020, China manufactured 25.22 million units of cars and sold 25.31 million units of cars, down 2% and 1.9% respectively, and down 5.5 and 6.3 percentage points respectively over 2019.

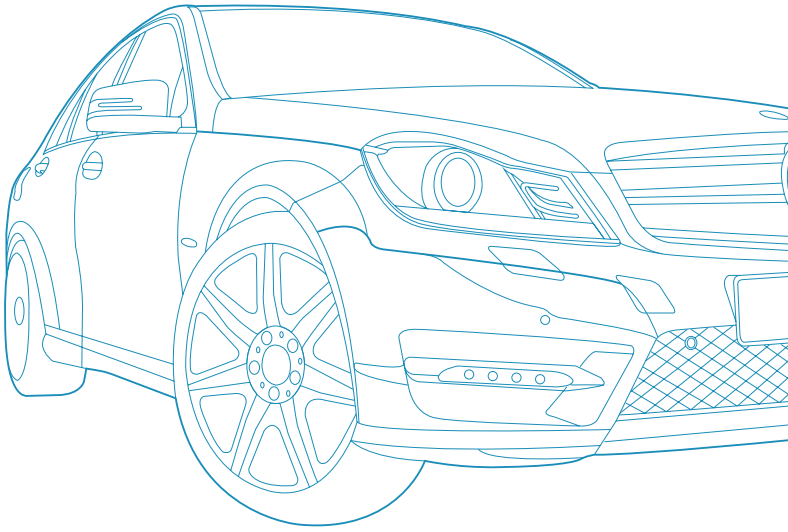
The vast automotive market provides huge potential for the development of automotive fasteners. Fasteners account for 40% of all components used on a car. A light passenger car or sedan roughly uses 5,000 pcs of fasteners (in 580 types, weighing 50 thousand grams) on average. A medium or heavy truck uses 5,710 pcs of assorted fasteners weighing 90 thousand grams. On the basis that a car weighs 75 kilograms, the automotive fastener scale should have reached 1.7 million tons by 2020.

Furthermore, as Chinese automotive industry steps up the pace, the ever intensifying market coupled with elevated automotive requirements on fastener quality (lightweighting, environmental protection, longer service life) keeps automotive fastener companies on the track of upgrading and reinventing their equipment. As you see, automotive fasteners are a huge market.

Highlight 2: Fast Development of Specialized Companies

Chinese automotive fastener companies can be roughly divided into two types: one being sizable with a unit dedicated to manufacturing, and the other being a specialized manufacturer of non-standard automotive fasteners. With a significant increase in demand, specialized companies are flourishing in China. This type of products have higher added values and have turned into a white hot territory of competition.

Statistics show there are 100 or so Chinese automotive fastener companies, among which are over 30 joint ventures. These companies with the total assets of around RMB 12.5 billion employ a total of 60 thousand people, and 80 companies or so are certified to ISO/TS16949. Only a few are granted to manufacture automotive fasteners for overseas



car brands, while most others are unable to tap into automotive fastener production, except for some who are OEMs. The main autotmotive fastener companies in China are Dongfeng Motor Fastener, Gem-Year Industrial, Fawer Automotive Parts (Fastener Division), Shann Xi Fang Yuan Auto Standard, Shanghai Teqiang Fastener Technology, Wenzhou Mingtai Si Standard Parts, Zhejiang Changhua Auto Parts, Shanghai Shangbiao Automobile Fasteners, Shanghai Autocraft, Hubei Youqian Auto Parts, Zhoushan7412factory, China Aviation Industry Standard Parts Manufacturing, Ying Ming (Fuzhou) Industrial, Zhejiang New Oriental Fastener Auto Parts, Chunyu (Dongguan) Hardware Products, Zhejiang Qiangli Fastener, etc.

Table 1. Characteristics of Chinese automotive fastener manufacturers

Characteristics	Analysis
Cost-competitive	Among the automotive fastener companies in China, the domestic ones are cost-competitive in a portion of the engine market and most of the non-critical fastener market.
Ability to Provide Auxiliary Products	By optionally mimicking overseas products, Chinese companies take in the know-how to quickly gain the ability to provide auxiliary products for the domestic market.
Lack of Breakthrough in R&D	Chinese companies lack sufficient abilities to develop high-tech engine fasteners as these abilities are mostly controlled by foreign companes.
Technology from Overseas	Most of the Chinese products are those with lower values. The core technology of these products generally comes from overseas.

Highlight 3: Higher Requirements on Automotive Fasteners

The competitiveness of Chinese automotive fasteners is largely attributed to the rise of domestic brands including BYD, Chery Automobile, China Young Man Automobile, Geely Auto, Anhui Jianghuai Automobile, as well as the novel development of Pan-Asia Technical Automotive Center, SAIC, Dongfeng Motor, Dongfeng Peugeot-Citroën Automobile, Ford, Zotye Auto, and

Qoros. As the automotive industry develops, requirements are stricter on fasteners. Threaded fasteners, cold forging medium-carbon steel, low alloy steel and ordinary surface treatment are not qualified to meet the requirements. The current methods to control thread fastening are the Torque Method, the Torque-angle Method, Yield Point Method, and Bolt Elongation Method. The installation process must include a check of static torque or a torque recheck to ensure that the static torque meets the technical requirement. Anywhere below or far above the static torque range will be deemed as a quality issue pertaining to fastening control. Automotive bolt fastening is to control the preload for bolt connection. For assembly quality, the fastening state of engaged threads must be strictly controlled to avoid slipping or gaps which result from the connection between the bolt and the fastened object and which further causes the engagement of threads to fail.

Table 2. Trend Analysis of Chinese Automotive Fasteners

Trend	Analysis
Stricter Steel Requirements	As an automotive fastening component, bolts must adapt to the designed high stress and be lightweight. To that end, new functions have been proposed for steel and special materials and technology continued to be introduced. This cannot reduce the cost of the components but may lower the total cost of the whole car or its components.
Stricter Quality Check	Many countries require that high-strength fasteners used on engines must be replaced after ten to twenty thousand hours of use, regardless of their quality. They cannot be shipped out of the factory if they don't meet that requirement. Elevating product level requires a great deal of calculation, analysis, tests and checks. Any flaws can lead to initial failure. Chinese companies are adding control methods for production lines and using dies to ensure precise sizes and shape tolerances in mass-production of high-end fasteners.
Diversified Demand	Depending on the components selected and the environment, automotive fasteners are diversified in material and structure. Conventionally, low-alloy cold-forged steel is used to manufacture automotive fasteners, but heat-resistant steel and stainless steel are increasingly applied where the environment is extreme such as engine superchargers, 3-way catalytic converters, exhaust manifolds, and transmissions.
Transition to High Quality and Durability	Technical improvement is essential in the transition from conventional fasteners to high precision automotive components. The new era of electric vehicles requires economical, easy-to-use automotive fasteners that can replace mechanical fasteners and well connect with colored aluminum, magnesium alloy, carbon fiber composites, rubber and plastic components.

The heat-resistant fastener materials and operating temperature indicate that the operating temperature for heat-resistant steel is below 700°C, that the operating temperature for nickel-based alloy is up to 820°C but the cost is high, and that stainless steel has higher strength but features the lowest operating temperature and lower costs.

Therefore, material selection requires consideration on both performance and costs. **Table 2** lists the expected development of future automotive fasteners.

Conclusion

Chinese automotive fastener industry is a huge, multi-layer and complex industrial system with many unignorable problems. 1. A large number of companies, huge capacity, multiple economic factors in existence, inconsistent quality. 2. Due to rising material prices and costs, the fastener industry is facing challenges from Southeast Asia, India, Brazil and other countries and regions. 3. Foreign companies are digging deep in Chinese fastener market, limiting the development of domestic brands. 4. Lacking innovation and critical high-end technology such as engine bolts. Falling behind in high-end product technology and low/medium-end quality.

In the next couple of years, the continuous development of cars and fasteners remains as one of the main pillars for national economic development. Since 2015, Chinese government has been releasing its "Made in China" blueprint once every two years, elaborating on and analyzing the status of Chinese manufacturing. By 2025, China's advanced railway transport systems, new energy powered cars, power generating infrastructure and construction are expected to be in line with the world's top players. China is still way behind in operating systems, industrial software, and aerial engines. The next decade will be crucial for Chinese cars and fasteners to transform and upgrade, develop, and turn from a huge manufacturing country into a strong one.

Anyway, the development of automotive fastener technology and equipment is the cornerstone for advanced automotive manufacture. There is a lot of room for the development of Chinese fastener technology and equipment. It is still a long shot for China to narrow the gap with overseas top players. Despite that, the outlook is quite promising. It requires a mechanism for steady growth of various investment and R&D, increased financial support for innovating automotive manufacturing technology, and continuous investment in new products and technology for automotive companies. ■