A Brief Analysis of China’s FPV Industry

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Abstract: FPV, also known as the racing drone , is a multi-rotor remote control aircraft (the current mainstream product is a four-axis multi-rotor), which is mainly composed of batteries, motors, rotors, cameras, remote controls and other components. At present, China’s FPV industry has the characteristics of driving business through competitions, low market concentration, small audience, and high entry barriers. According to forecasts, Chinese FPV market will continue to grow in the future and is expected to reach 11 billion yuan in 2027.

1. FPV industry characteristics

At present, the domestic FPV industry has the characteristics of driving business through competitions, low market concentration, and less audience.

1.1 Driving business through competitions

Different from traditional consumer products, FPV is not formed by demand, but driven by competitions. Since 2017, X-FLY introduced the first racing drone competition to China, which triggered a large scale of geek enthusiasts to release FPV videos on the Internet, attracting more people to understand and try to travel through FPV. In these developing years, the role of racing drone commercial events is obvious, and the industry has formed a business model that uses commercial events to attract public attention and interest, thereby creating demand and generating profits.

1.2 Low market concentration

At present, the audience of the FPV is mainly drone enthusiasts, and most of them are self-assembled. The demand for the whole machine is small, and there are just several manufacturers. The current FPV market still dominated by purchase raw materials and assemble them yourself. The customers based of the FPV will purchase dozens of parts and consumables such as racks, flight controllers, ESCs, etc. Manufacturers has not yet achieved a unified standard and has not yet mass-produced. At present, there are few complete machine manufacturers at home and abroad. In China, there are only a few drones such as DJI and Unicorn FPV. The company clearly released the FPV complete machine package. Overall, the current market concentration of the FPV industry is low, and the competition pattern has not yet formed.

1.3 Less audience

Due to the high entry threshold for operation and assembly, the current entrants of the FPV are still mainly drone enthusiasts and professional racing drone players, and the audience has not yet broadened. Based on the current market conditions of FPV, its audience was initially professional players in racing drone events. Later, due to the attention of many geeks to the event, many drone enthusiasts began to try the FPV that can bring the operator an immersive experience from the first perspective. Drone enthusiasts and professional players still dominate the group. Only a few people who are not in the drone industry "enter the pit" for flying through drones due to online videos, event videos, etc., but their audience is still relatively less.

2. Analysis of the industry chain of cross-travel aircraft

At present, China's FPV industry is in the start-up period and is still an emerging high-tech industry. The industry chain is widely

distributed and involves many fields, and key links such as research and development, production, sales, and operation and maintenance are highly interdependent.

2.1 Upstream - component suppliers

The market concentration in the upstream of the industrial chain is extremely low. As a UAV, the drone involves many electronic components. Different types of components are produced by many different manufacturers, and the market composition is complex.

According to the existing data, the market size of sensors for key components of FPV has increased from 169.1 billion yuan in 2017 to 251 billion yuan in 2020, showing an upward trend year by year; the output of engines has been stable for several years. In 2021, it will be maintained at 2.6 to 2.7 billion kilowatts. In contrast, the number of core players of the FPV is less than 5,000 (the data comes from the video released by the famous FPV blogger Danghongzhaziji FPV in bilibili in 2020). The demand for parts is small, and the market demand for FPV is small. Relevant technologies, components, and raw materials have formed large-scale mass production advantages in China, and the components required for the FPV are not unique, and such components can also be assembled in other drones or electronic technology products , generally speaking, the supply is far greater than the demand, and the demand for spare parts of the FPV cannot affect the spare parts market.

2.2 Midstream - complete machine manufacturer

In the middle reaches of the industrial chain, DJI is currently the most well-known and high-quality enterprise in the domestic market, and the complete machine manufacturers focus on aerial photography FPV. No drone company has devoted itself to the development of racing drones. The main reason is that most participants are professional UAV racing players and UAV enthusiasts. They have individual requirements for the operation mode and mobility of the racing FPV, and it is difficult to realize the mass production of the whole machine.

2.2.1 Analysis of the development trend in the midstream

The FPV is still a highly DIY product, and the midstream is assembled as a whole machine. They are all open sources. The frames are made of carbon fiber boards and 3D printed parts. The designs are mostly the same, and the price gap between parts is also small. Therefore, even if there are complete machines such as DJI FPV, most players still choose DIY. The biggest ones in the FPV market are aerial photography and racing. Racing players pay special attention to the drone's attitude, speed, and acceleration procedures. Aerial photography players pay attention to shooting clarity and shooting angle diversity. At present, FPV products cannot meet the unique needs of different players. In contrast, DIY is more flexible and personalized, and can meet unique needs.

To sum up, even though the mid-stream machine manufacturers in the FPV industry chain are constantly trying out FPV with different characteristics to meet unique needs of people, it is still difficult to replace the uniqueness of DIY in the future and occupy most markets.

2.3 Downstream—— racing drone competition, film production users

Based on the current industry situation, the application of the FPV is still concentrated in two aspects: competition and film shooting.

2.3.1 User portrait analysis

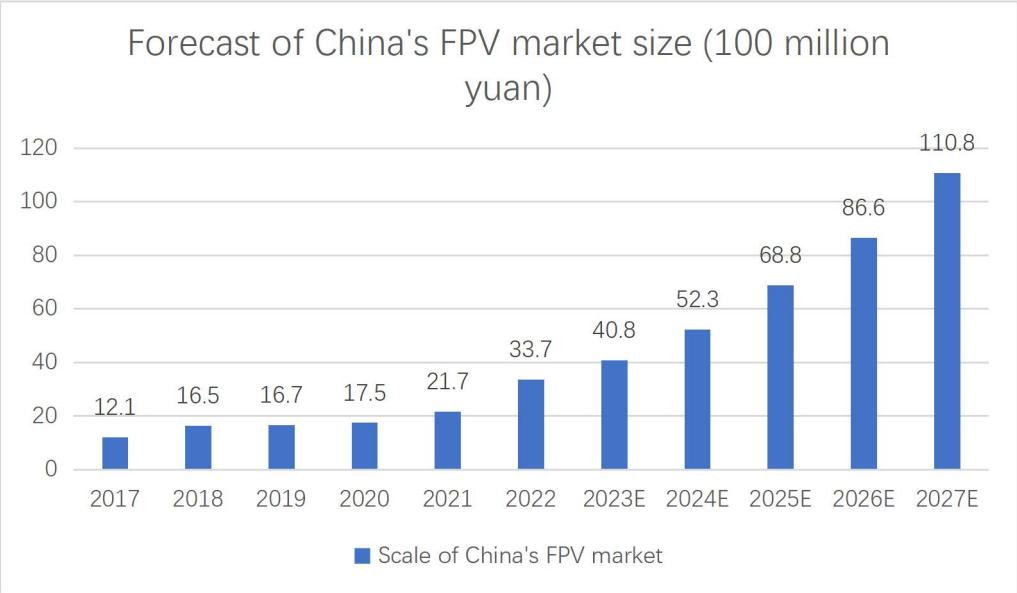
At present, there is no accurate user data research in the FPV market. The FPV blogger "Danghongzhaziji FPV" released the 100th video on March 13, 2020 to analyze the number of real domestic FPV core players. Estimates were made, and the data was obtained based on the number of members of the FPV alliances and associations he participated in, the number of registrations for large-scale racing drone competitions such as the World Championships, and the information he obtained from DJI's internal personnel. The blogger divides the FPV players into three circles for data estimation. The minimum requirement for the core circle is to have glasses or eye masks, be equipped with brushless motors, and be able to fly once a month or more on average. The number of domestic FPV players is about 5,000 People around, including racing drone players, drone bloggers, and geeks who love drones. These players are the main users of the FPV market, but they will basically not buy whole machine products. Because they have more personalized needs for the experience of all aspects of FPV; the second circle expands the scope on the basis of the core circle to contact hollow cup

FPV or Simulators, players with remote control, the number of domestic players is about 30,000, and most of these players are not long-term users of FPV. Most of them have an attitude of experimentation. Based on the above classification and data, the domestic FPV has a small audience and a small number of people, and it is still mainly DIY. Most users still cannot obtain the desired personalized experience from the whole machine product.

2.3.2 Analysis of application scenarios

The extremely high degree of freedom of flight provides more diverse applications for the FPV. Currently, the main application scenarios are aerial photography of major events and film and television dramas. At present, there are many FPV racing alliances active in China, including MultiGP, DRL, X-FLY, etc. Drone racing competition has been initially commercialized; The shooting of many domestic film and television dramas, variety shows, etc. has incorporated the FPV into it. For example, the "Aerial Photography of China" series launched by CCTV in 2017 use the unique perspective of the FPV.

3. Scale Forecast of FPV Industry



The forecast uses DJI sales data over the years, DJI's market share, the number of registered Chinese drone owners, the number of FPV players in China, etc.

One of the main reasons for the increase in the market size of China's FPV industry is that in recent years, the number of Chinese FPV players has continued to increase. According to the Civil Aviation Industry Development Statistical Bulletin, the number of registered users of drone owners in China has increased from 200,000 in 2016 to 700,000 in 2022. The annual growth rates are all positive, so it is predicted that the number of registered users of Chinese drone owners will continue to grow in the future; The number of active players in player clubs and alliances has been officially entered into China since 2017. According to unofficial statistics, the number of players in 2020 will be about 30,000, which is used as the basis for data prediction.

In addition, the second main reason is that domestic drone companies are entering the FPV industry, and UAV companies are more optimistic about FPV. DJI released the first FPV product in March 2021, and released DJI Avata in 2022. Domestic drone companies are constantly developing FPV products and continuing to enter the FPV industry, so as to predict the future of the Chinese FPV market will gradually expand.

References

[1] Hu YP. (2022) New member in the UAV "Traverser". Digital Media Research (08),71-72.

[2] Liu Z. (2019). Current situation and countermeasures of traverser control. Journal of the Armed Police Academy (08),61-65.

[3] Hu YP. (2022). New member in the UAV "Traverser". Digital Media Research (06),44-46.