

Reflections on the Management of Scientific and Technological Intellectual Property Rights of Commercial Aircraft Enterprises

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Abstract: Many enterprises do not have a good understanding of whether commercial aircraft should strengthen the protection of scientific and technological intellectual property rights and its effect. Most commercial aircraft enterprises have realized that strengthening the protection of scientific and technological intellectual property rights is conducive to the cultivation of independent innovation capability and the promotion of market competitiveness of commercial aircraft, which is of great significance to the development and construction of enterprises. However, some enterprises do not attach importance to the scientific and technological intellectual property rights, and do not carry out corresponding protection, which results in the leakage of the core technology of commercial aircraft and brings great challenges to the management and operation of commercial aircraft. This work first started from the nature of scientific and technological intellectual property rights of commercial aircraft, then clarified the necessity of scientific and technological intellectual property rights protection, and finally formed the corresponding management schemes of scientific and technological intellectual property rights, so as to enhance the protection effect of science and technology intellectual property right comprehensively based on the property right reserve, scientific research management, patent application, and risk assessment.

1. Introduction

Since the end of the 20th century, the world aviation market has become increasingly competitive. Boeing, Airbus and other industry leaders gradually transfer processing, manufacturing, assembly and other production links to areas with cheap labor through the adjustment of resource allocation and business strategy, so that they can focus on the control of design, integration, marketing and other core value links. As a result, they can achieve the "technology monopoly" based on the protection of scientific and technological intellectual property right through the output of scientific and technological intellectual property rights. Since the project approval of commercial aircraft, foreign mainstream aircraft manufacturers compete to develop patent deployment in China, and the number of patent applications in China shows a sharp rise trend, covering almost all design specialties such as overall, structure, strength, hydraulic pressure, avionics and flight control. The number of patent applications shows an increasing trend year by year [1]. The number of patent applications is increasing year by year. In view of the patent arrangement of foreign aviation enterprises, the market in China has not yet accumulated the ability to compete with them in the commercial competition of scientific and technological intellectual property rights, and commercial aircraft are still facing great risks of scientific and technological intellectual property rights and the situation of patent containment, which is urgent to be addressed and changed.

2. Nature of Scientific and Technological Intellectual Property for Commercial Aircraft

In addition to the proprietary, temporal and regional characteristics of general scientific and technological intellectual property rights, commercial aircraft scientific and technological intellectual property rights are also characterized by specificity and confidentiality, which are

embodied as follows:

First, exclusiveness. Most of the intellectual property rights of commercial aircraft science and technology are produced under the huge investment of scientific research institutions, which have absolute monopoly right and free use right, and have private ownership after applying for patent.

Second, specificity. The main purpose of intellectual property rights for commercial aircraft technology is service. Due to the safety and economic interests of flight, the use of scientific and technological intellectual property rights is mostly confined to the field of aviation flight [2].

Third, incomplete marketability. Due to the important position of commercial aircraft scientific and technological intellectual property rights in aviation security, the state has the right to control the trading behavior and trading market of commercial aircraft scientific and technological intellectual property rights. In particular, core technologies need be tradable with national permission.

Fourth, confidentiality. In order to effectively prevent the infringement of scientific and technological intellectual property rights of commercial aircraft, the scientific and technological intellectual property rights of commercial aircraft should strictly abide by the requirements of the confidentiality law. Its research, development, application, review, transfer, implementation and inquiry are kept confidential and subject to many restrictions.

3. Management Measures of Scientific and Technological Intellectual Property Rights of Commercial Aircraft

3.1. Intellectual property reserve

First, the commercial aircraft sales market should be taken as the guide, so as to formulate a scientific, efficient and feasible strategy for scientific and technological intellectual property rights. It is also important to clarify the mode of creation, application, implementation, management and protection of scientific and technological intellectual property rights, perfect its incentive and assessment mechanism, fully mobilize the enthusiasm of technical personnel, complete the patent layout from the source of commercial aircraft development design, effectively protect the intellectual achievements produced in each stage, and lay a good foundation for the smooth development and commercial success of commercial aircraft. In addition, strengthening the reserve of scientific and technological intellectual property rights is not only to increase the number of scientific and technological intellectual property, but also to pay attention to the expansion of the coverage of patent applications, so as to occupy a place in the core technology field, the future direction of technological development, and the valuable patent blank field [3].

Second, it is necessary to carry out foreign patent layout pertinently. Commercial aircraft takes the global market as the target market for commercial operation, facing the international market competition. The patent reserve of the international market must be carried out in advance, and the standard practice of multinational corporations is generally patent first, that is, before the actual entry of commercial operation (some of which are as long as 10 years), they begin to realize targeted patent input in the target market, so as to seize the market and protect the subsequent commercial operations. At present, it takes about 3 to 5 years to apply for international patent from application to authorization. Therefore, for commercial aircraft that will be delivered to users in a few years, the layout of international patent application should be carried out according to the target market.

3.2. Rational use of patent application

First, leading product development and gaining market advantage. The first priority of intellectual property management of science and technology is not to obtain income through foreign licensing and transfer, but to use intellectual property rights in science and technology to protect their own market and gain market advantage. Scientific and technological intellectual property rights need to first ensure that commercial aircraft enterprises can use their technologies to produce, sell products or services and apply innovative technologies to the production process efficiently.

Second, transferring the possession of patent license. Commercial aircraft enterprises may specially set up business development and licensing departments to engage in the scientific and technological intellectual property rights. In terms of technology licensing and transfer, commercial aircraft enterprises have their own standards, and their licenses are often directed at enterprises that have a demand for the technology and are not competitors in other fields, which mainly for supply chain or other partners manufacturing aircraft. For example, on October 24, 2014, the Boeing Company transferred an American patent to the German Siemens company.

Third, technology subcontract production. In order to expand more markets, commercial aircraft enterprises often need to share some of their technology with their partners, for example, they cooperate with foreign partners in terms of scientific and technological intellectual property rights and related technologies. In this process, it is necessary to protect the core intellectual property technology and subcontract production mainly by manufacturing technology cooperation. In the process of cooperative innovation, enterprises should avoid the loss of scientific and technological intellectual property rights, unfair distribution of scientific and technological intellectual property rights, unfair competition of scientific and technological intellectual property rights and malicious theft of scientific and technological intellectual property rights.

Fourth, investment and transformation. Commercial aircraft enterprises can set up a professional investment system, including government relations, sales, marketing, business development, aviation services, and global partners. They should constantly look for innovative subjects, invest in appropriate technology, provide security for the market development of commercial aircraft enterprises, forming a high-quality and high-efficiency technological innovation chain.

3.3. Improvement of the early-warning mechanism for risks

The laws of all countries have strict stipulations on the time limit of litigation. Once the patent litigation process starts, commercial aircraft will have very limited time to investigate, analyze, collect evidence, respond to lawsuits or file counterclaims. With the increasingly fierce market competition, the patent layout of Boeing, Airbus and other companies is gradually improved, and the scientific and technological intellectual property disputes must be prepared in advance, actively establish and improve the scientific and technological intellectual property litigation response mechanism, organize dispute response drills, and prepare to deal with the possible scientific and technological intellectual property risks in the future.

In view of the current situation of major aviation enterprises competing to develop patent layout in China, the establishment of a sound early-warning mechanism of scientific and technological intellectual property rights is of great importance to the control of scientific and technological intellectual property rights risk, which can prompt the management to start discussions on how to deal with the possible crisis months or even years earlier than normal [4]. For commercial aircraft development, the establishment of a sound patent warning-system can be considered from the following aspects:

First, it is necessary to establish a mechanism for tracking and collecting risk information, establish early-warning tasks, set early-warning objects, propose early-warning indicators, follow up regularly, and collect relevant risk information regularly;

Second, it is necessary to establish a process of risk information analysis and demonstration, straighten out the risk discovery, retrieval, analysis, judgment of infringement or infringement conclusions, demonstrate the audit conclusions, and put forward the work flow of emergency plan, so that the process of dealing with scientific and technological intellectual property rights can be formalized and controlled, and can be completed within the preset response time period;

Third, it is necessary to establish a mechanism for issuing early-warning information, establish an early-warning level and scope, and issue early-warning information to decision-makers and preset early-warning objects in a timely manner according to the conclusions of the analysis;

Fourth, it is necessary to establish a mechanism for collecting and storing evidence of scientific and technological intellectual property. The work of scientific and technological intellectual property needs to be vigilant. In the course of carrying out early-warning work, the collection and

storage of evidence should be strengthened to reserve evidence resources for patent risks that may occur in the future.

3.4. Cooperation and sharing for mutual benefit

In order to improve the expected utility of intellectual property sharing in commercial aircraft technology, for one thing, it is necessary to establish a fair and reasonable benefit distribution mechanism within the cooperative innovation organization. Benefit distribution is the focus of cooperative innovation and the motive source of innovation. The fairness of benefit distribution directly affects the stability and long-term nature of cooperation. In the process of scientific research cooperation of commercial aircraft enterprises, it is necessary to adhere to the principle of "distribute according to work, invest more and get more", and make it clear in the form of contract, so as to ensure the fairness and transparency of income distribution, improve the effectiveness of scientific and technological intellectual property sharing and maintain long-term stability of cooperative innovation organizations.

For another, it is necessary to use the scientific and technological intellectual property policy environment of commercial aircraft to form an effective incentive mechanism. Within the scope allowed by national policies, the sharing strategy of scientific and technological intellectual property rights should be used reasonably, and the classification of property resources and the division of property rights interests should be done well, so that both parties can achieve scientific and technological knowledge confidentiality under the interests and form a good cooperative relationship

4. Summary

As the second largest commercial aviation market in the world, China needs a large number of commercial aircraft in the next 20 years. It not only brings great opportunities to the commercial aircraft enterprises, but also poses greater challenges to commercial aircraft enterprises. Only by setting up strict awareness of intellectual property protection and suffering from the source of design and research and development, respecting objective laws, emancipating the mind, opening up and innovating, combining the innovation of intellectual property rights in science and technology with the layout of the intellectual property protection system of independent science and technology, responding to the risks of intellectual property rights in science and technology, and carrying out the work of intellectual property rights in science and technology scientifically and efficiently, can it provide reliable technical support and legal guarantee for the market-oriented and international operation of commercial aircraft and comprehensively promote the construction and development of China's commercial aircraft market.

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