

Research on the Development Strategy of Foreign Trade of LED Industry in Jilin Province

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Abstract. In recent years, the number of energy-saving optoelectronic enterprises in Jilin Province has been increasing. Some LED lighting companies' products not only have a certain share in the domestic market, but also in foreign trade, the products of enterprises have also been recognized by foreign consumers. The LED enterprises in Jilin Province have mastered certain product production technologies. Moreover, some enterprises have built production lines of a certain scale, and the economic contribution of enterprises has gradually increased. However, LED enterprises still encounter difficulties and have some problems to be solved in the development of the international market competition.

Keywords: Legal; Intellectual property; LED industry.

1. Introduction

There are many enterprises in Jilin Province that produce LED display, LED commercial lighting and other products. In the production of some products, they have mastered certain technologies, and also built an industrial chain of manufacturing, sales, construction and service integrity. LED lighting can create a beautiful, comfortable, safe, energy-saving, low-carbon light environment for customers, and the product has the characteristics of energy saving, luminous stability and high quality. Some companies' products have been sold to Europe, America, Southeast Asia and other countries and regions. Although the LED enterprises in Jilin Province did not form an industrial agglomeration effect, some enterprises have brands with high social recognition and products with good quality, and they have a certain share in the domestic and foreign markets. However, fluctuations of the international economic climate and the trade protection will also have an impact on the development of foreign trade.

2. Trade Protection Fluctuations Affect Industry Foreign Trade

On October 19, 2011, the Coalition for American Solar Manufacturing (CASM), established by six anonymous U.S. photovoltaic enterprises and led by a subsidiary of Germany's Solar World in the United States, made a complaint to the United States Department of Commerce and International Trade Commission, claiming that the Chinese 75 related enterprises received the government subsidies and dumped their products at a price lower than the cost in the United States. At the same time, it also accused the Chinese government of providing a large number of illegal subsidies to domestic enterprises, including a large amount of cash subsidy, extremely cheap raw materials, even free land, electricity and water resources, billions of dollars of preferential loans, a large amount of tax relief, tax refund policies and preferential export insurance policies. Besides, it required the U.S. government to impose 100% anti-dumping and anti-subsidy duties on China's photovoltaic products exported to the United States. [1]

3. LED Industry Urgently Needs to Strengthen Intellectual Property Protection

With the accelerating pace of industrial upgrading, the added value of China's export commodities is increasing, and the share of exports is also rising. In the international competition, competitors will inevitably choose various ways to influence the export of China's industry in order to ensure their own competitive position. Due to the weak sense of intellectual property protection of many

companies, and the lack of attention to the maintenance of brands and trademarks, led to the international companies frequently encountered the international intellectual property litigation of foreign multinational companies, resulting in a large loss of China's LED companies economically. [2]

Taking the LED industry as an example, in the field of LED lighting, the proportion of patent applications in China accounted for more than one-third of the global total. However, the Chinese patent applicants generally have a low invention authorization rate and technical content in the field of LED semiconductor lighting are more focused on the industry downstream, the number of core technology patent applications is insufficient, important patents are still concentrated in the hands of foreign companies such as Nichia, Osram; in the field of LED lighting backlight display, foreign patent applications to China account for a large proportion (43.7%), especially Japan and South Korea enterprises have more patents in mainland China and the overall advantages are obvious. Although domestic patent applicants already have certain technical strengths, there is still a certain gap in the quality of patents compared with foreign countries.

Table 1. Comparison of LED patent holders between China and America

Ranking	LED patent holders in America	LED patent holders in China
1	Samsung	Philips
2	Philips	LG
3	Kodak	OSRAM
4	RIYA	SHARP
5	OSRAM	AU Optronics Corp.
6	Xerox	Ocean Wang Zhaoming Polytron Technologies Inc.
7	LatticePower	Cree Inc.
8	IBM	Semiconductor energy research institute
9	KELI	RIYA
10	ROHM HRRS	ToshibaCorporation

Note: Chinese patents are ranked as patent rights for invention licenses up to the end of 2011, and U.S. patents are ranked up to the end of 2010.

As shown in Table 1, In Chinese and American LED patentee rankings, Philips ranks first among the Chinese LED patentee ranking, while Philips ranks second in the American LED patentee ranking. Philips is a famous company from Netherlands. Judging from the LED patentee ranking comparison between China and America, only the Ocean's King Lighting Science & Technology Co., Ltd. is China's, and the rest enterprises are from the United States, South Korea, Germany, Japan and other countries. [3]

Table 2. Comparison of patent numbers at home and abroad

Technical field	Foreign quantity	Domestic quantity	Total	Invention authorization abroad	Domestic invention authorization
Extension	387	416	793	340	114
Chip	1512	730	2242	279	134
Encapsulation	4090	11690	15699	1303	1340
Application	3951	18292	22207		

Source: Shanghai Silicon Intellectual Property Trading Center.

From the perspective of the comparison of distribution of the number of patents at home and abroad, the domestic applications of the patent are more concentrated in the closed and application. The number of domestic invention patents is obviously lower than foreign invention licenses. Comparing the situation at home and abroad in the number and quality of patents, it is obvious that there is a certain technological gap between Chinese LED enterprises and foreign enterprises in terms of intellectual property. Moreover, most of the invention patents of domestic LED enterprises are not original. They are all patched up on the basis of the original patents of international LED giants, and

their patent value is greatly reduced. If there is a real patent lawsuit with international LED giants, nearly 70 percent of domestic enterprises' LED invention patents may be invalid. The lack of intellectual property makes Chinese LED enterprises have disadvantages in international competition, which clearly shows that our country's LED enterprises still have much room to improve their technology and should pay more attention to the quantity and quality of patents. (See Table 2 for details).

The attention and protection of intellectual property plays an important role in the internationalization of LED enterprises. Intellectual property has become a passport for enterprises to participate in global competition. The enterprises need to speed up the promotion of patent quantity and quality, promote business innovation, and be familiar with international intellectual property laws and regulations to prevent possible litigation risks in the process of international intellectual property protection. And the work of protecting and strengthening intellectual property has directly affected the enterprises outward development speed. Because the risk of litigation not only affects the enterprises' interests directly, but may even affect the existence of enterprises. Therefore, it is of great practical significance to attach importance to the work of intellectual property in order to ensure the smooth outward development of enterprises.

4. Suggestions on the Development of LED Industry in Jilin Province

It can be seen from the above research that the LED industry needs to strengthen intellectual property protection in the development of foreign trade to enhance the ability of enterprises to cope with risks. On the whole, LED companies are vulnerable to changes in international trade in the development of foreign trade, especially the changes in trade policies of major trading partners, which will directly affect the development of enterprises in foreign markets. Therefore, in the international market competition, enterprises need to enhance their awareness of legal protection, actively respond to risks in the international market, and carefully study international intellectual property laws, so as to better ensure the smooth outward development of enterprises.

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References

- [1]. Zuo Xu, Match Study on Personnel Policy and Science Technology Human Resource of Strategic Emerging Industries. Proceedings of 2016 4th International Conference on Management Science, Education Technology, Arts, Social Science and Economics, 2016.
- [2]. Qingping Chen, Research on internationalization of strategic emerging industries in Anhui province, Northern Economy and Trade, no. 11, p. 44-46, 2018.
- [3]. Zhiyong Xian, Jie Xu, Research on Synergism Collaboration Protection Mechanism of Intellectual Property Rights in Strategic Emerging Industries. Proceedings of 2013 International Conference on Psychology, Management and Social Science. Vol. 16, p. 338-342, 2013.