INDUSTRY HIGHLIGHTS

ELECTRICAL VEHICLES VS HYDROGEN

JULY 2022

LIGHTHOUSE IP INFORMATION

LIGHTHOUSE IP
MONTHLY REPORT

INTRODUCTION

Under the influence of energy shortage and environmental pollution, new energy vehicles have received more and more attention. With the rapid development of technology, the application of new energy vehicles is gradually increasing, and the market share is rapidly increasing, showing a trend of gradually replacing the traditional fuel vehicles.

Among the new energy vehicles, there are two categories: electric vehicles mainly based on lithium batteries and fuel cell vehicles mainly based on hydrogen energy. Among them, the development and application of electric vehicles are more mature, while hydrogen fuel cell vehicles have the advantages of more environmental protection and pollution-free. Therefore, this report analyzes the technologies related to electric vehicles and hydrogen fuel cell vehicles in the new energy vehicle industry from the perspective of patent technology.

GENERAL INFORMATION

Figure 1 shows the number of patent applications for electric vehicles and hydrogen fuel cell vehicles in the past 20 years. It can be seen that the number of patent applications for both maintain a steady growth trend. Among them, the number of patent applications for electric vehicles increased rapidly, while the number of patent applications for hydrogen fuel cell vehicles increased relatively slowly.

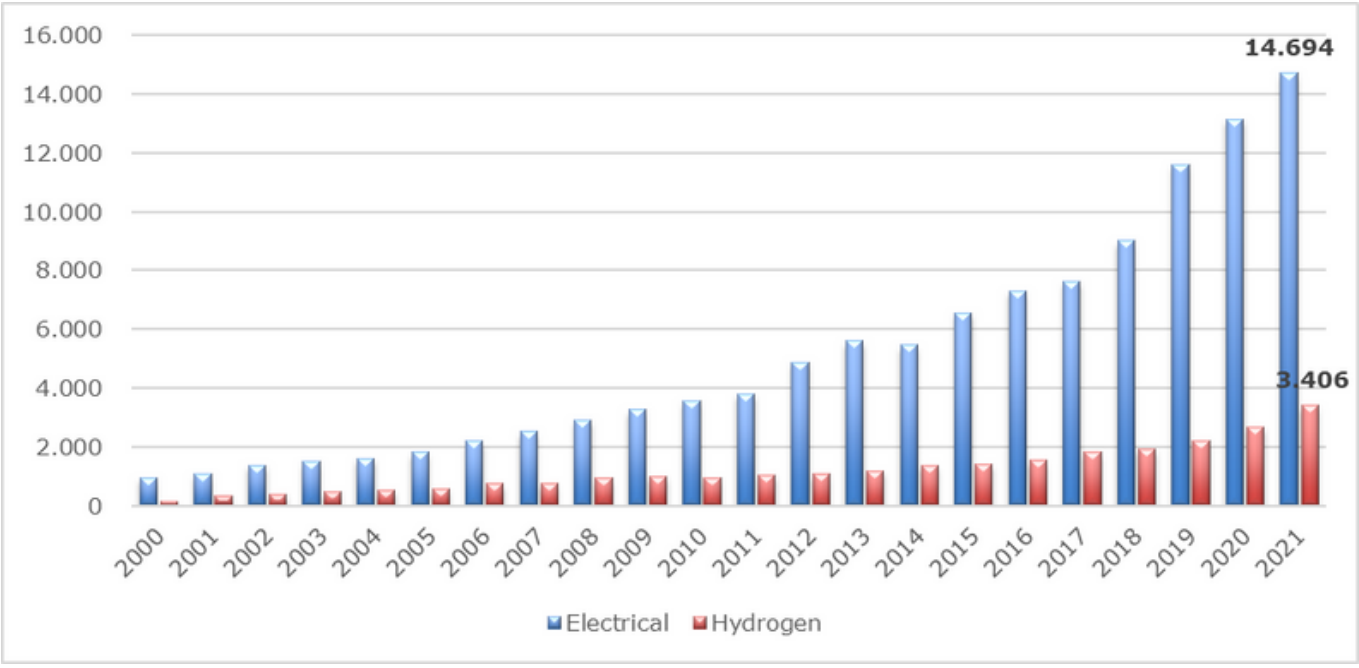

Figure 1 Patent application trend of Electrical vehicles VS Hydrogen

GENERAL INFORMATION

In fact, the earliest patents related to electric vehicles can be traced back to 1923, with the total number of patents reaching more than 120,000. However, the patents for hydrogen fuel cell vehicles began to appear gradually in the 1960s, and the total number of patents is less than 30,000 (not shown in the figure).

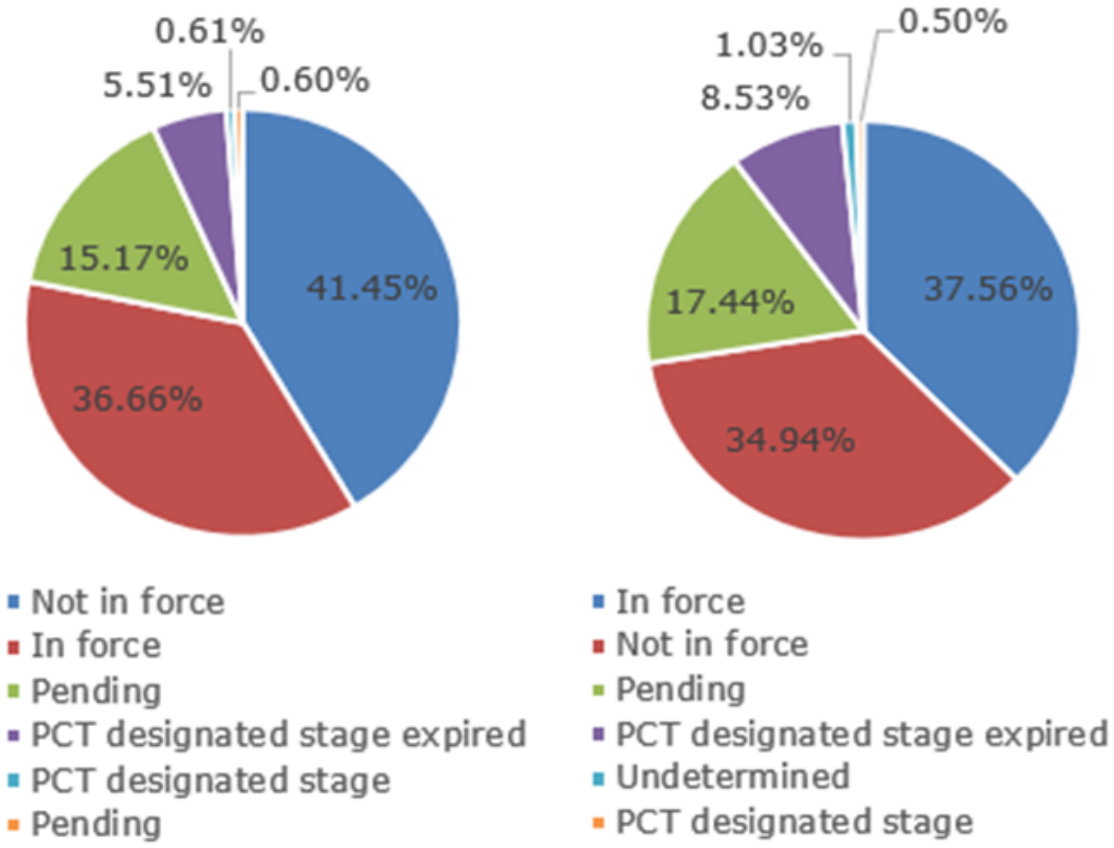

Figure 2 Legal status of Electrical vehicle patent (Left) VS Hydrogen (Right)

Figure 2 shows the legal status of patents for electric vehicles and hydrogen fuel cell vehicles. It can be seen that the proportion of patents under legal protection is similar, 36.66% and 37.56% respectively.

GEOGRAPHIC TERRITORIES

Figure 3 and Figure 4 respectively show the main countries of patent technology origin and target markets for electric vehicles and hydrogen fuel cell vehicles. It can be seen that Japan, China, the United States, Germany and South Korea are the countries with the largest number of patent technology applications and acceptances in these two fields. Among them, Japan has applied for the most patents on electric vehicles and hydrogen fuel cell vehicles, while China is the largest target market for electric vehicle patents.

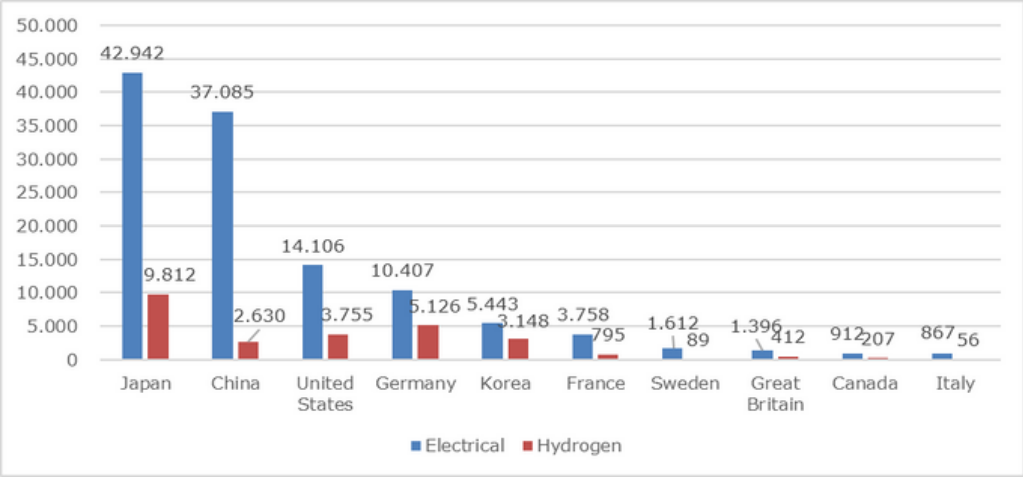

Figure 3 Top countries of origin

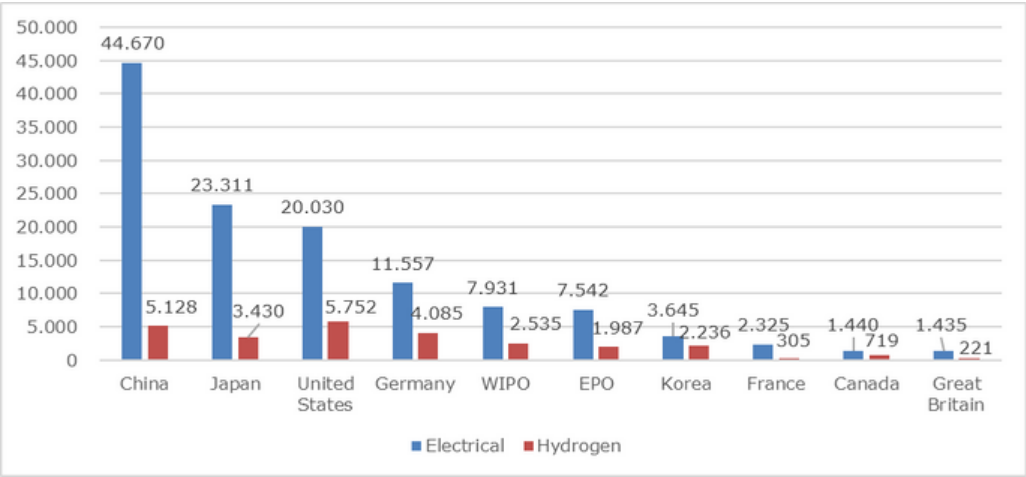

Figure 4 Top countries of target

GEOGRAPHIC TERRITORIES

Figure 5 and Figure 6 respectively show the application trends of the main technology origin countries of electric vehicle patents and hydrogen fuel cell vehicle patents. It can be seen that in these two technical fields, the number of patent applications in Japan, the United States, Germany and South Korea has basically maintained a stable level, while the number of patent applications in China has increased significantly in recent years.

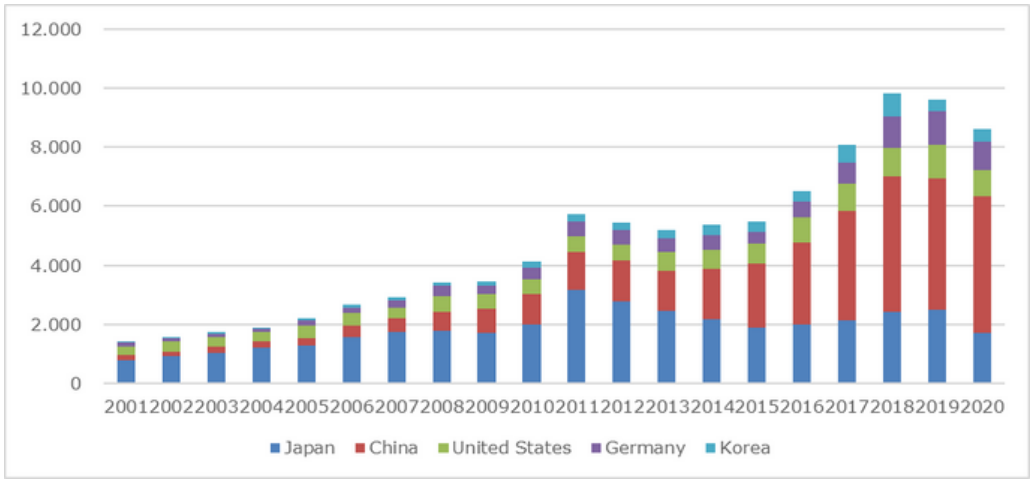

Figure 5 Top countries of origin trend about electric vehicle patents

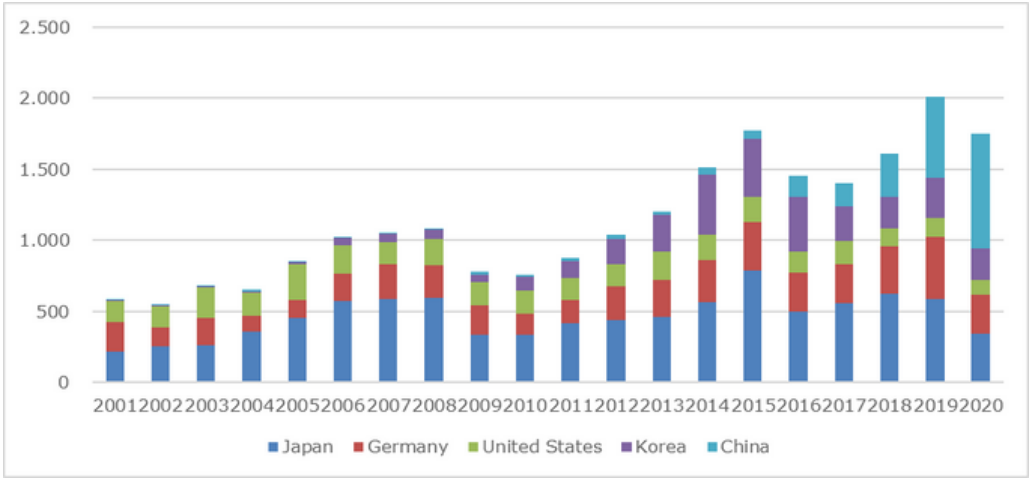

Figure 6 Top countries of origin trend about hydrogen fuel cell vehicle patents

STANDARDIZED CURRENT ASSIGNEES

Figure 7 and Figure 8 respectively show the top ten applicants in the field of electric vehicles and hydrogen fuel cells. It can be seen that in these two technical fields, the top ten applicants in the number of patent applications overlap more. Among them, Toyota has great advantages in the field of electric vehicles and hydrogen fuel cell vehicles.

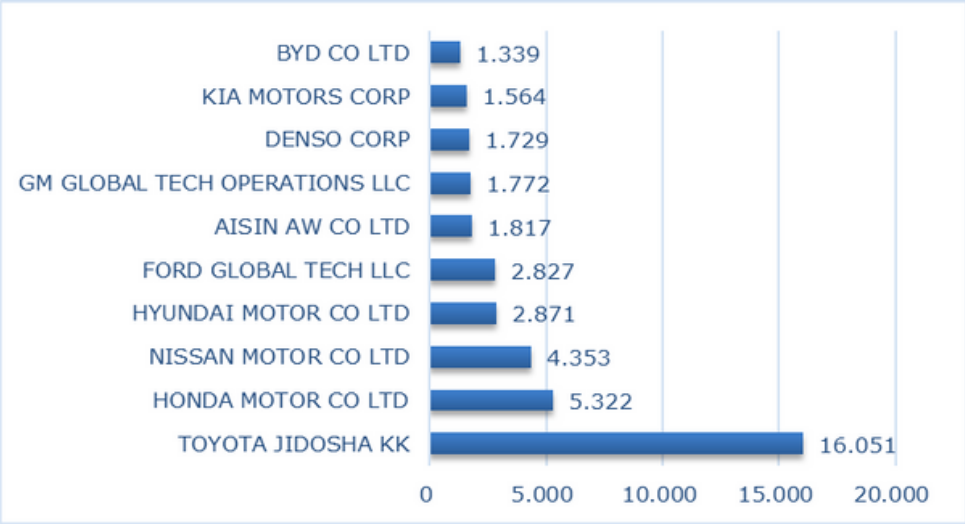

Figure 7 The top 10 standardized current assignees about electric vehicle patents

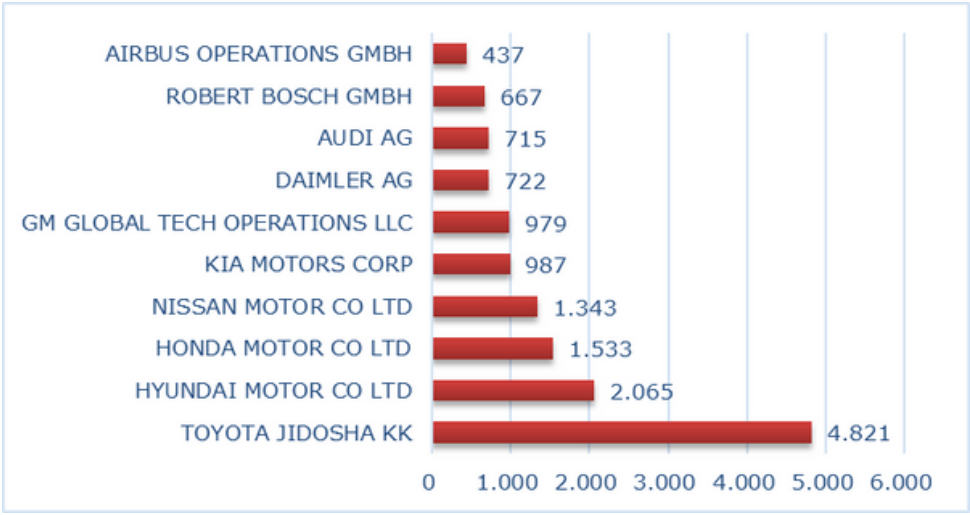

Figure 8 The top 10 standardized current assignees about hydrogen fuel cell vehicle patents

CONCLUSION

The number of patents related to electric vehicles and hydrogen fuel cell vehicles has maintained a **steady increasing trend**.

At present, the number of patents related to electric vehicles is significantly higher than that of hydrogen fuel cell vehicles.

At the same time, in these two technical fields, the patent application countries and companies show great **relevance**, that is, **countries or companies with technical advantages in the field of electric vehicles** also **show strong advantages in the field of hydrogen fuel cells**.