Recent Filing Trends in the Space Industry in Japan

Following the footsteps of the global trends, now that a wide range of Japanese enterprises are becoming involved in the space business, its market size has been expanding in Japan. This article introduces a summary of the JPO technical trends and our analysis of Japanese patent filing of space aircraft.

Summary of JPO technical trends

Search conditions

Technology: Spacecraft*

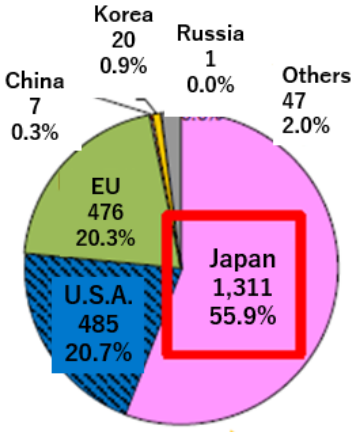
*Rockets, rocket engines, artificial satellites (including exploratory vehicles and transportation vehicles), engines related to these technologies, technologies related to launch pads, etc.

Search period: 2003 through 2017 (based on year of priority)

Subject: patent families filed in Japan, U.S., Europe, Korea, and China

Patent Filing at the JPO

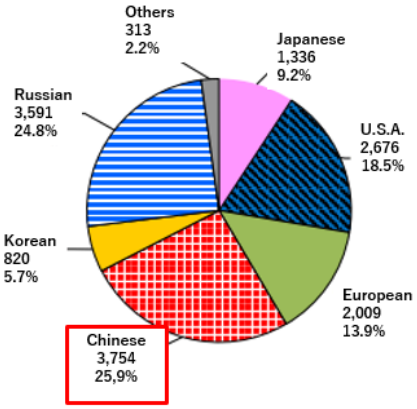
Of 2,347 cases, about half of the cases were filed by Japanese applicants from 2003 to 2017 at the JPO. U.S. applicants account for 20.7% while European applicants account for 20.3%



Patent Filing at the IP 5 offices (JPO, USPTO. EPO, KIPO, CNIPA)

The total number of patent applications filed at IP5 offices by Japanese applicants is substantially lower than the number of cases filed by other nations, such as the U.S. and Europe. For example, Japanese applicants filed 173 cases at the EPO (ratio: 3.8%) and filed 233 cases at the USPTO (ratio: 5.4%) In contrast, Chinese applicants

has a presence in the figure.



Total: 14,499 cases

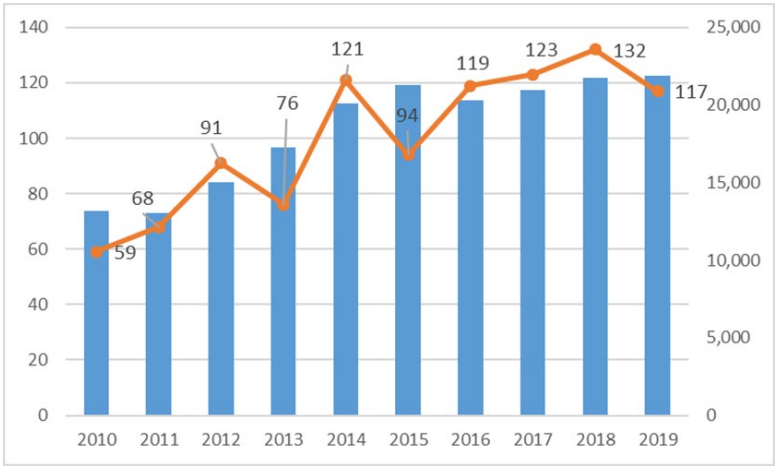
The above figure shows that Japanese companies lag behind European and American companies in light of patent-filing activity of space-related technologies.

Our Analysis of Japanese filings of space aircraft

We have dug into the filing trends on spacecraft at the JPO.

Market size and change in filing trends

First, the Japanese market size of the space industry is estimated to be worth 12 billion USD by 2030 (1.2 trillion JPY　1USD = 100 JPY).　The number of cases over the past decade have grown gradually.　(IPG: B64G space aircraft)

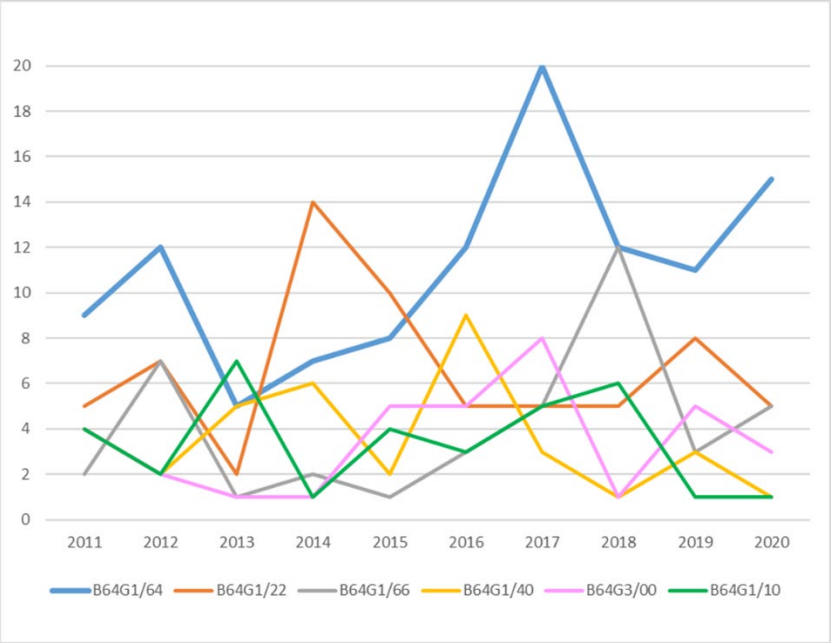


● Number of publications filed at the JPO (IPC: B64G)
*Data source: NRI Cyberpatent

■ Amount of sales of space-related products (10 million JPY)
*Data source: report from the Society of Japanese Aerospace Companies

Analysis of Japanese filings (IPC: B64G)

More cases regarding equipment for connecting space aircraft and its accessories were filed than other technology.



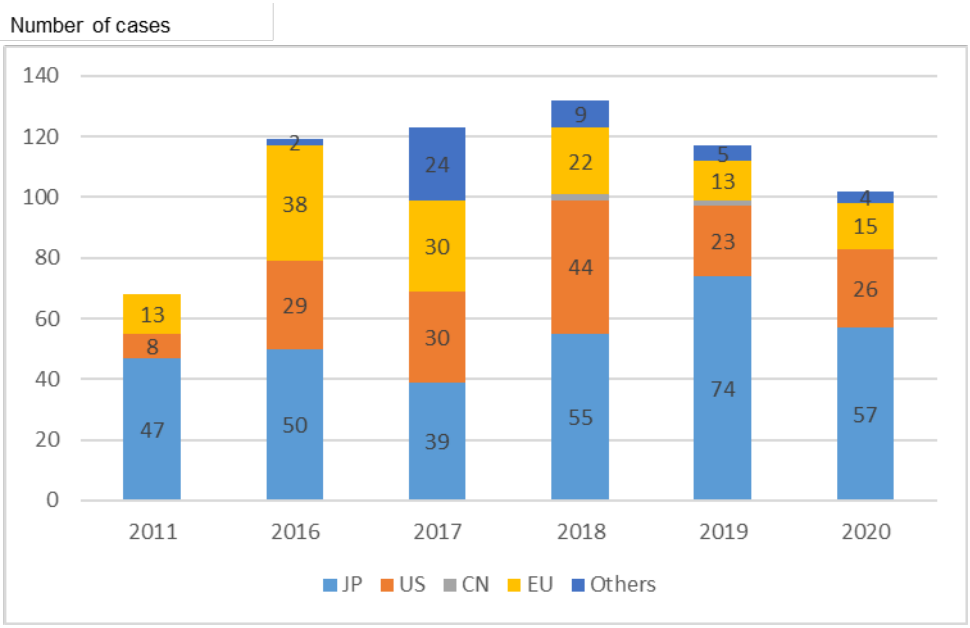
［Definition of IPC］

- B64G1/64: Systems for coupling or separating cosmonautic vehicles or parts thereof, e.g. docking arrangements
- B64G1/22: Parts of, or equipment specially adapted for fitting in or to, cosmonautic vehicles
- B64G1/66: Arrangements or adaptations of apparatus or instruments, not otherwise provided for (e.g. antennas for use in satellites)
- B64G1/40: Arrangements or adaptations of propulsion systems
- B64G3/00: Observing or tracking cosmonautic vehicles
- B64G1/10: Artificial satellites; Systems of such satellites; Interplanetary vehicles

Analysis of applicants filing to the JPO (IPC: B64G)

Japanese applicants dominated more than half the total in 2011. However, since 2016, Japanese and overseas applicants have competed with each other in terms of the number of cases filed at the JPO. European applicants filed more cases in 2016 and 2017. However, U.S. applicants have taken over this position since 2018. From 2017, universities and research institutes came to file the cases and spin-offs from major companies filed cases with their name. In 2019, the number of cases filed by

universities increased and overseas startups also filed their cases at the JPO. From 2018, Chinese applicants and other overseas applicants, except for the U.S. and Europe, started filing cases at the JPO.



Top Applicants among 102 cases filed in 2020

Applicants	No.
Mitsubishi Electric (JP)	11
JAXA (JP)	10
Boeing (US)	5
Northrop Grumman (US)	5

Conclusion

Patent protection for space-related technology was apt to be underestimated in Japan. However, more and more companies are actively penetrating the space business, patent applicants need to bolster their business strategies and use their patents as a bargaining chip to survive a fierce global competition.