

Intellectual Property Report 2020

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Introduction

I would like to welcome you to the first-ever intellectual property report by the Furukawa Electric Group. We have a long-term policy called the Furukawa Electric Group Vision 2030. It states that “In order to build a sustainable world and make people’s life safe, peaceful, and rewarding, the Furukawa Electric Group will create solutions for the new generation of global infrastructure combining information, energy, and mobility.” Our business and research and development activities are aimed to achieve this vision and the SDGs* in three ways.

1. Promote research that addresses customer needs and social issues
2. Refine the Furukawa Electric Group’s core technologies in metals, polymers, photonics, and high-frequency
3. Create new businesses through open innovation and co-creation

In addition, with the evolution of AI and digital technologies, we will strengthen efforts to bring together management assets such as human resources of the Furukawa Electric Group.

Under these circumstances, we believe that the utilization of intellectual properties related to our core technologies and the creation of new businesses based on intellectual property data will become more critical in the future. We treat intellectual property as one of our business’s essential management assets and use our intellectual property assets to advance our competitiveness.

I hope that you will have a better understanding of the intellectual property activities of the Furukawa Electric Group by reading this Intellectual Property Report 2020.

*SDGs is the acronym for the Sustainable Development Goals.



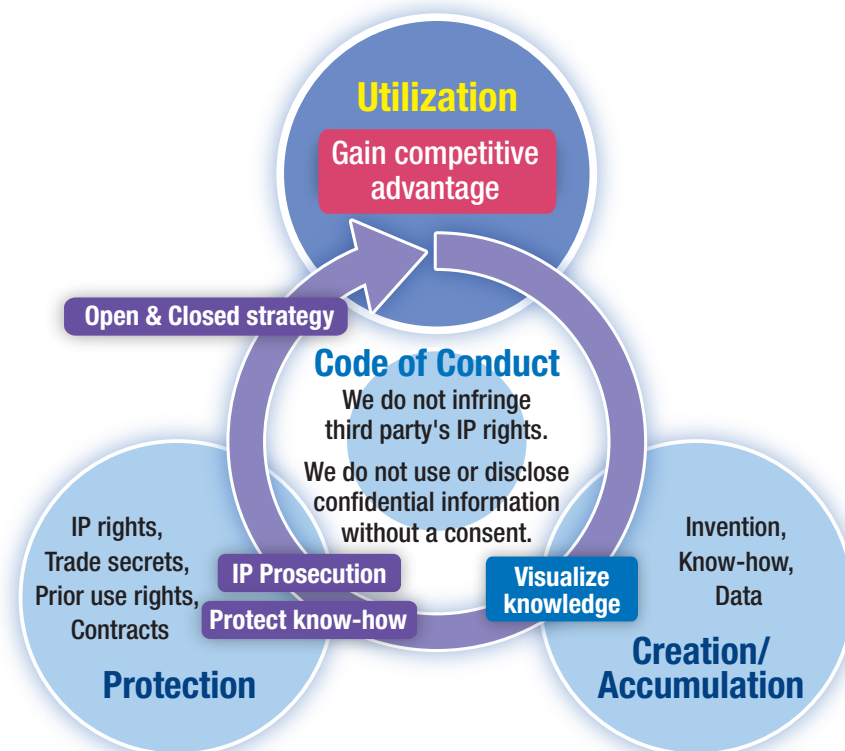
October 2020
General Manager of Research &
Development Division
Tetsuro Ijichi

1 Management of intellectual property

1-1. Basic approach

By positioning intellectual property (IP) as one of the management assets for business, the Furukawa Electric Group promotes “IP management,” in which IP is used for the enhancement of business competitiveness. The basic policy is to run an IP cycle which starts from the the IP utilization to its creation and accumulation, and then to protection. We implement the IP strategy for our core technologies and execute IP activities to enhance business.

This execution of the IP cycle is intended to minimize our business risks and build and maintain our competitive advantage in business.



Toward the Furukawa Electric Group Vision 2030

We are experiencing tremendous changes in society and industrial structure, driven largely by digitalization. In order to be more competitive and achieve sustainable growth, we are promoting the “the IP Landscaping” wherein IP information is used to develop strategies. By incorporating IP information to achieve the Furukawa Electric Group Vision 2030, we are proactively working to enhance our business strategy as well as our IP strategy.

About the corporate brand

We created Group Global Logo Mark Guidelines to strengthen our corporate brand. The guidelines set proper use of our Yamaichi Mark, registered as a trademark in 1877, by setting the colors and the area of isolation and providing examples of use. The Yamaichi Mark was created when the founder of the Furukawa Group, Ichibei Furukawa, decided in 1877 to leave the yarn industry after many years of operation and concentrate on the mining industry. It is considered by us to express the image of “Japan and tradition”, and our commitment to society by taking the tradition of technological innovation and flexibly responding to the demands of the times and contributing to the world.



Group Global Logo Mark

1-2. Risk management

In its Code of Conduct, the Furukawa Electric Group addresses two issues: 1) protection of intellectual property rights and 2) management of confidential information. Under the Code of Conduct, we promote activities to reduce intellectual property risk globally. For example, we strategically use our intellectual property rights based on competitive patent portfolio analysis and prevent technical information leaks.

We have categorized intellectual property risks into four categories: “infringement risk,” “trade secret outflow risk,” “counterfeit risk,” and “contract risk.”

Infringement risk

To ensure that Furukawa Electric’s products do not infringe other companies’ intellectual property, we regularly and continuously examine other companies’ patent information. These measures help us avoid the risk of direct damage to the business and loss of opportunity.

Trade secret outflow risk

We identify and protect technical know-how at our development and manufacturing sites and enhance information preservation using a time-stamp system. Also, we regularly check external announcements, including press releases. These measures help us avoid unintended disclosure of confidential information and other risks.

Counterfeit risk

To protect Furukawa Electric’s products, we have obtained patent rights, utility model rights, design rights, and trademark rights. If necessary, we are always ready to seek an injunction or monetary relief when a third party infringes our intellectual property rights. These measures allow us to avoid the risk of loss, such as a decline in market share.

Contract risk

When Furukawa Electric enters into a technical contract, the Intellectual Property Department reviews the terms before signing. By doing this, we avoid the risk of future disputes concerning the terms of the non-disclosure agreements, joint research agreements, and sales contracts.

These activities to reduce intellectual property risks have been adopted across the entire Furukawa Electric Group in Japan and overseas. Specifically, the following activities are being carried out:

- Continuous intellectual property education to employees
- Regular publication of “IP Newsletter” to share initiatives to reduce intellectual property risks (published in Japanese, English, and Chinese)
- President’s awards for intellectual property risk reduction activities
- Sharing of country-specific intellectual property risk information with overseas group company managers

2 Activities

2-1. Within FEC

- Intellectual Property Officers (assigned to each business unit and research laboratory)
- Bases of the Intellectual Property Department (Yokohama, Chiba, Hiratsuka, and Shiga)
- Intellectual property education
- Patent awards, invention compensation, etc.

Furukawa Electric assigns an Intellectual Property Officer to each business unit and research laboratory, and implements a three-part strategy of business, research and development, and intellectual property, led by a team consisting of members from the business units, research centers, and intellectual property departments. The Intellectual Property Department has four offices in Japan, and conducts activities in close daily communication with business units and research laboratories.

Intellectual property education is organized and continuously implemented in-house. We encourage inventions by providing means such as patent-award citations and invention compensation.



2-2. Within FEC Group

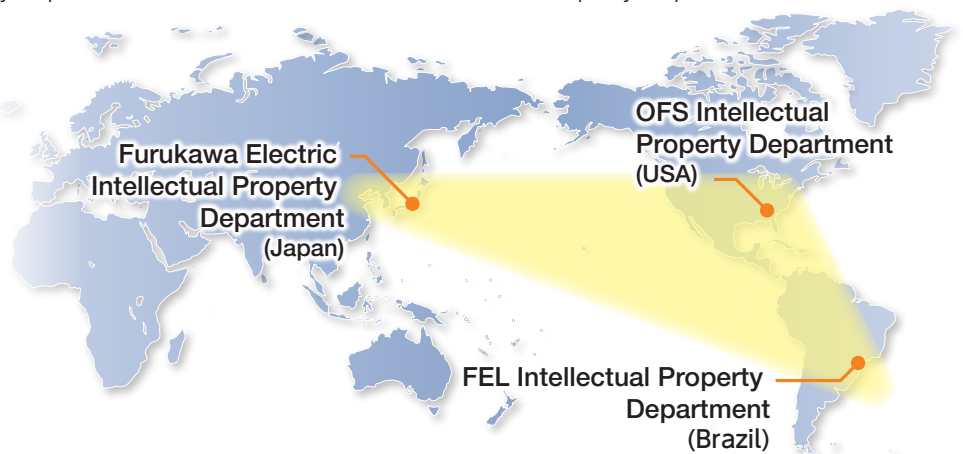
- Designated persons in charge of intellectual property activities (domestic and overseas group companies)
- Intellectual Property Department bases (OFS, FEL)
- Publicizing intellectual property activities

We shared Furukawa's intellectual property policy across all group companies in Japan and overseas.

Each domestic group company has a designated person who promotes intellectual property activities in cooperation with the Intellectual Property Department.

Furukawa's intellectual property department also interacts with the Intellectual Property Departments of OFS (USA) and FEL (Brazil) and holds regular meetings.

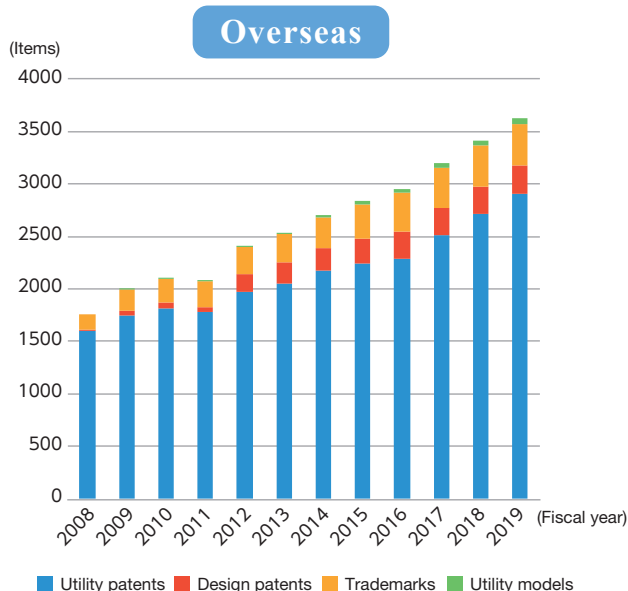
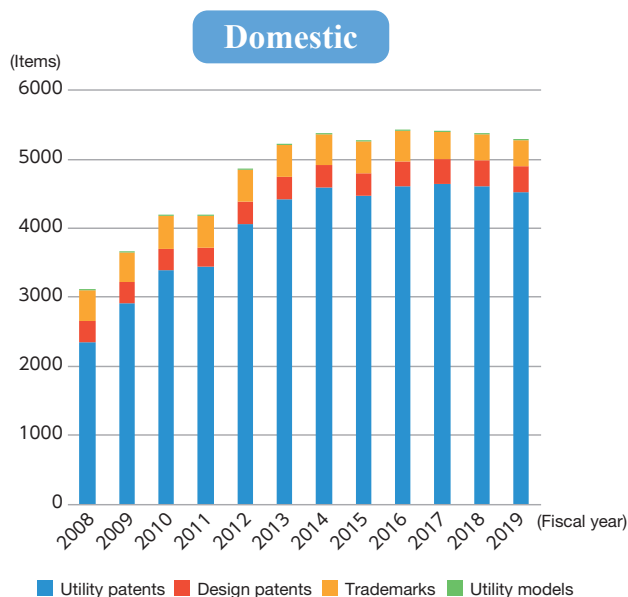
In addition, we are promoting intellectual property activities throughout the Group by providing intellectual property education tailored to each company's needs and providing patent-award citations for domestic and overseas group companies.



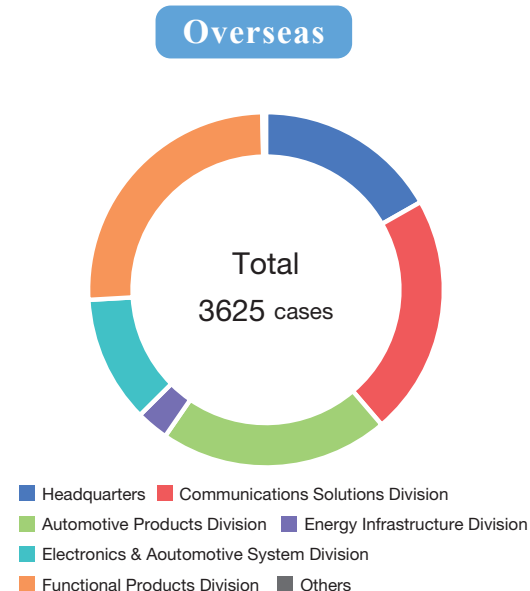
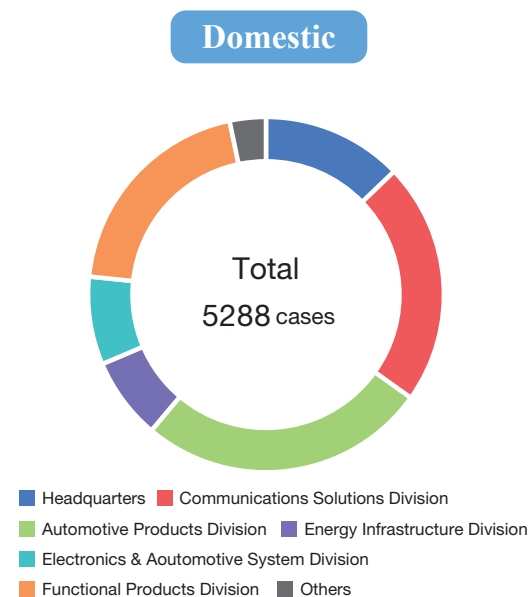
3 Intellectual property portfolio

Rights held by Furukawa Electric over the years and breakdown of rights by division in fiscal 2019

Rights held by Furukawa Electric (fiscal 2008-2019)



Breakdown of rights by division in fiscal 2019



In order to strengthen its business competitiveness through intellectual property, the number of rights held by Furukawa Electric has exceeded 5,000 in Japan in the past six to seven years, including fiscal 2019.

With the expansion of sales in global markets, the number of overseas rights in the US, Europe, and China has increased, and in 2019, the number exceeded 3,500.

We strategically create intellectual property rights based on patent portfolio management that incorporates competitive intelligence. Furthermore, we will use intellectual property to build and maintain a competitive advantage.

4 Example of intellectual property activities

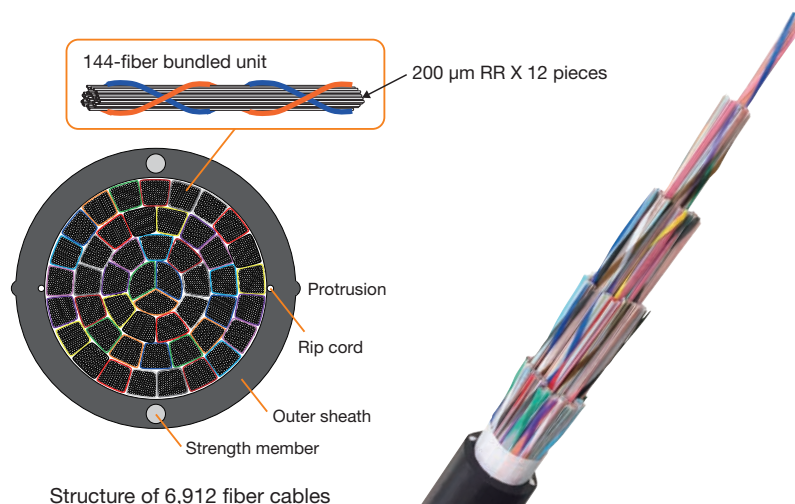
Example of strengthening business through intellectual property activities (Communications Solutions Division)

Small-diameter Ultra-high Fiber Count Rollable Ribbon Cable

The rollable ribbon (RR), which is constructed by bonding optical fibers at intervals, is increasingly being used in ultra-high fiber count (UHFC) cables. The rollable ribbon method enables cables to be made with higher density and lower weight than conventional encapsulated flat ribbons because the rollable ribbons are formed with partial separation between fibers. In addition, by bonding 12 optical fibers, which have a small outer diameter of 200 μm (traditionally 250 μm), the world's highest density assembly of 6,912 optical fibers in a cable of 29 mm outer diameter has become possible. This new development enables the installation of 6,912 fiber cable into bulk in existing pipe conduits with an internal diameter of 1.25 inches to build a large-capacity network more efficiently^{*1}.

In fiscal 2019, the Communications Solutions Division expanded its capacity to manufacture rollable ribbon cables in Japan and at OFS in the U.S. We aim to expand its sales worldwide, mainly in North America, and to increase the sales ratio of the rollable ribbon cables to the optical cable sales in the U.S. market to 50% by fiscal 2022.

6,912-Fiber Rollable Ribbon Cable ^{*2}



We have already filed approximately 80 patent applications in Japan and overseas for the technology used to differentiate the rollable ribbon cable, and we are increasing our applications in the U.S., Europe, and Asia. We are also working to improve the accuracy of strategic decision by incorporating intellectual property information into strategy development, which accords with the rollable ribbon cable sales growth policy. Moreover, we have enhanced risk treatment by utilizing time-stamps as a tool for information protection. We hold online meetings with the OFS Intellectual Property Division every other week to share information on our intellectual property strategy.

*1: Press release

*2: Furukawa Electric Review #139

5 Topics

Received the “Derwent Top 100 Global Innovators 2020 Award” (February 26, 2020)

We were chosen among the “Top 100 Global Innovators 2020” by Clarivate Analytics, a global information service company. This is the fifth award and the third-consecutive award from 2018 for Furukawa Electric.



Participation in the “Intellectual Property Open COVID-19 Declaration” (June 3, 2020)

This declaration promotes free access to participants’ intellectual property rights for activities aimed at ending the global spread of COVID-19. We are decisively contributing to an early end to the spread of the COVID-19 pandemic by providing free access to our intellectual property rights in the medical field, including patents covering fluorescent silica nanoparticles and flow cytometers, which can be used in the diagnosis of COVID-19 infection.



About Issuing of the Intellectual Property Report 2020

Intellectual property is the height of the Furukawa Electric Group’s accumulated wisdom and is a valuable management asset for building business competence. We have to use this intellectual property effectively as a “valuable” management asset.

Meanwhile, the Furukawa Electric Group is actively incorporating “the IP Landscaping”, which analyze intellectual property data in a particular field and improve marketing efficiency for developing strategies. By doing so, Intellectual Property Department is expanding from just a functional division to a strategic division.

From these viewpoints, we are grateful to present our policies and activities of intellectual property, which are based on the use of intellectual property, in this report. We hope that you will have a better understanding of the intellectual property activities of the Furukawa Electric Group through the report.

October 2020
General Manager,
Intellectual Property Department
Michio Ohkubo





Intellectual Property Report 2020

FURUKAWA ELECTRIC CO., LTD.

Intellectual Property Department