Asahi Kasei Group Intellectual Property Report 2017

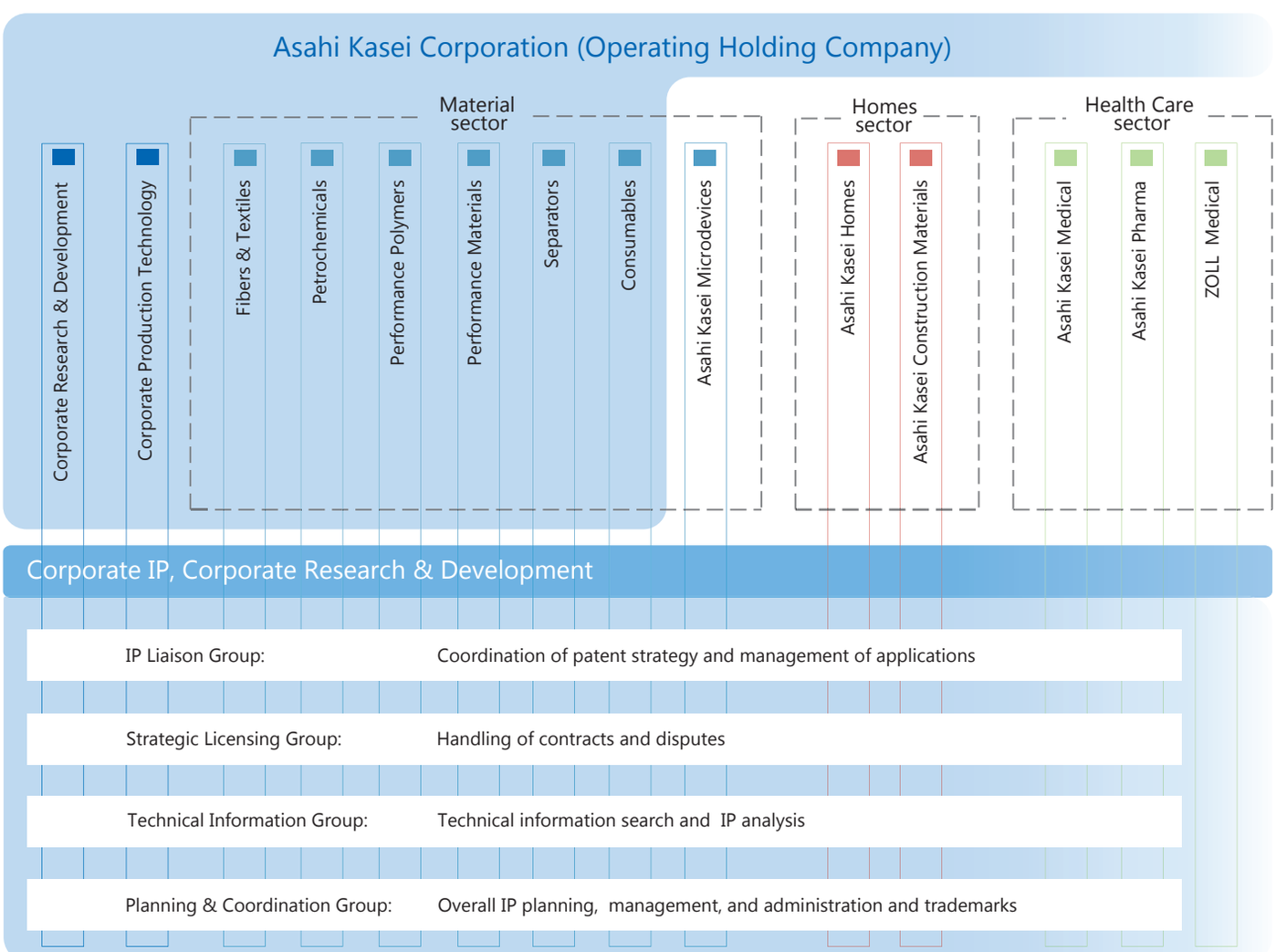
Organization for IP

Corporate IP, part of Corporate Research & Development in Asahi Kasei Corp., is the organization responsible for management of intellectual property (IP) for the Asahi Kasei Group. Corporate IP formulates and executes the Asahi Kasei Group's overall IP strategy and provides the shared infrastructure for IP functions.

Liaison personnel of Corporate IP support the business units (strategic business units and core operating companies) by coordinating with inventors, formulating individual IP strategies, identifying IP, securing IP rights, and enforcing those rights in accordance with each business unit's business strategy and R&D strategy. Corporate IP reinforces key functions through its Strategic Licensing Group, Technical Information Group, and Planning & Coordination Group, which provide Group-wide services performed by dedicated specialist personnel.

ZOLL Medical Corporation and Polypore International, LP in the United States, which joined in the Asahi Kasei Group in 2012 and 2015, have their own IP personnel who work to identify IP, secure IP rights, and enforce those rights in accordance with their policies.

Asahi Kasei Group Organization for IP



IP Strategy

Basic Policy

To facilitate the creation of new businesses as an important management task in the Asahi Kasei Group, the management strategy, IP strategy, and R&D strategy of each operation are integrated as one. IP activities directly contribute to the management of operations by acquiring IP rights from R&D results to gain business advantage, enabling the creation of new businesses and securing the profitability of existing businesses.

The business units take the lead in formulating an IP strategy that matches the characteristics of each operation. With a focus on strengthening existing businesses, equal emphasis is placed on the quality and the quantity of patents. Strategic licensing is performed when it is deemed an effective means to heighten the contribution of IP rights to our own business operations.

A relationship of mutual trust and reliance is fostered between the personnel working on IP and those working on R&D, and the IP and R&D functions are advanced in close coordination with a common objective of strengthening business operations.

Thorough Patent Searching

The Asahi Kasei Group considers reliable and effective patent searching to be vital, and thorough patent searches are performed at critical phases in the process of developing IP rights. Patent searches are conducted by different personnel in correspondence with different purposes. Technical information specialists in Corporate IP conduct key searches related to subjects which significantly impact business operations. Researchers conduct primary searches themselves, which enhances their patent searching ability and heightens their motivation.

Continuous monitoring of patent information related to R&D projects for selective dissemination of information (SDI) is another focus of patent searches. These search and monitoring results are compiled into a strategic database which is utilized as described under IP Portfolio, below.

IP analysis was recently enhanced to enable more effective support for R&D strategies and IP strategies.

Overseas IP Strategy

The acceleration of globalization is one of the basic strategies of the Asahi Kasei Group's "Cs for Tomorrow 2018" medium-term management initiative, which started in fiscal 2016. Accordingly, Corporate IP places emphasis on the securement and utilization of firm IP rights that support global expansion of business operations, especially in the US, China, Europe, East Asia, Southeast Asia, and other emerging countries. As our operations expand globally, China's presence continues to grow both as a manufacturing base and as a market. Meanwhile, the US has renewed importance for us with the creation of new businesses and M&A. Particular emphasis is therefore placed on our IP activities in the US and China.

IP Portfolio

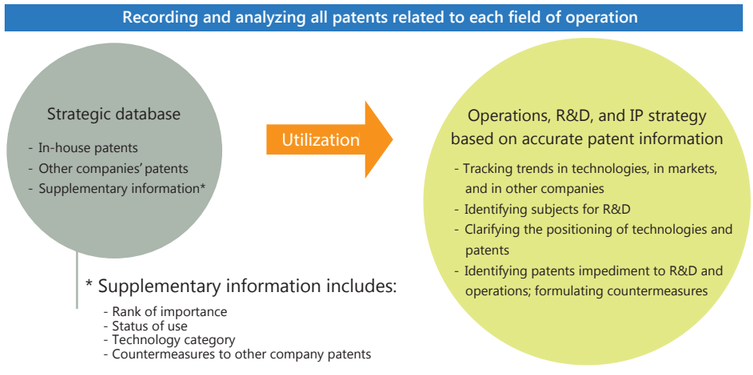
The Asahi Kasei Group maintains a strategic database (SDB) of patent information to enable strategic analysis in the management of its IP portfolio. The information contained in the SDB is used for the advancement of business operations, R&D, and IP activities.

One unique characteristic of the SDB is the inclusion of supplementary information specific to each individual patent (both in-house patents and other company patents) as related to each R&D project. The supplementary information includes a rank of importance, status of use, technology category, and countermeasures to other company patents.

Key aspects of the utilization of this SDB include 1) tracking trends in technologies, in markets, and in other companies, 2) identifying subjects for R&D, 3) clarifying the positioning of technologies and patents, including those of other companies, and 4) identifying patents which would pose an impediment to R&D or business operations, and formulating countermeasures.

Through maintenance and utilization of the SDB, the IP Liaison Group and the Technical Information Group of Corporate IP work closely together with each R&D organization to formulate and implement countermeasures in response to other company patents as well as plans for in-house patent applications.

Strategic Database of Patent Information



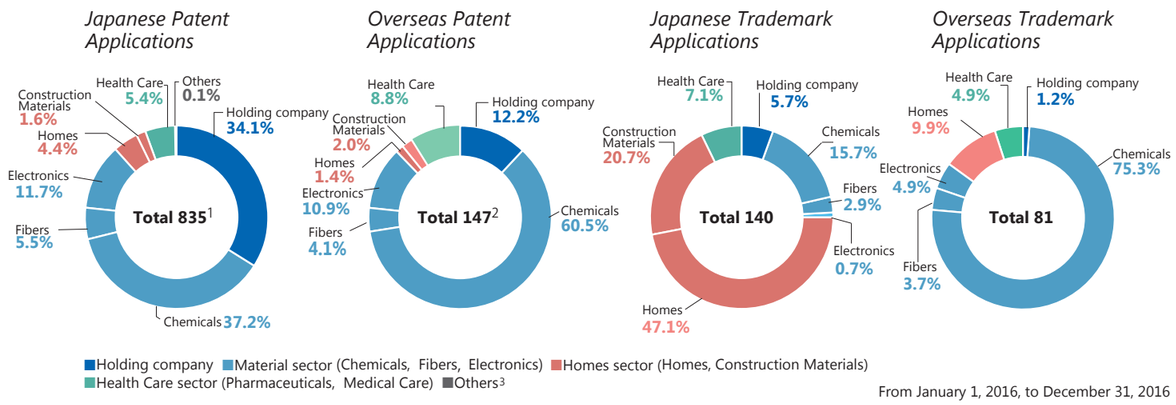
Number of IP Applications and Rights

The Asahi Kasei Group continuously works to maintain an IP portfolio that secures market superiority in business operations. The IP portfolio is reviewed annually to determine whether to file patent applications and whether to maintain or abandon patents and applications, as well as the feasibility of licensing.

Among Japanese patents, those in practice in 2016 amount to 36% of the total (38% in the previous year).

Combined with those scheduled to come into practice, this rises to 60% (61% in the previous year). The 40% of the total which is classified as "defensive and other" includes many strategically essential patents which serve to inhibit the entry of competitors.

The number of patents held overseas is steadily rising with patent protection playing an increasingly important role for global operations.



From January 1, 2016, to December 31, 2016

Number of Applications, by Business Category

From January 1, 2016, to December 31, 2016

		Holding Company	Chemicals	Fibers	Electronics	Homes	Construction Materials	Health Care	Others[3]	Total
Patents	Japanese	285	311	46	98	37	13	45	1	835[1]
	Overseas	18	89	6	16	2	3	13	0	147[2]
Trademarks	Japanese	8	22	4	1	66	29	10	0	140
	Overseas	1	61	3	4	8	0	4	0	81

Number of IP Rights, by Business Category

As of December 31, 2016

		Holding Company	Chemicals	Fibers	Electronics	Homes	Construction Materials	Health Care	Others[3]	Total
Japanese Patents	In practice	106	1,232	220	420	386	145	125	8	2,642
	Scheduled to be in practice	540	617	112	225	185	69	34	8	1,790
	Defensive & other	255	1,271	176	412	200	109	201	26	2,650
	Total	901	3,120	508	1,057	771	323	360	42	7,082[1]
Overseas Patents	US	224	581	56	195	0	3	110	9	1,178
	Europe	320	844	188	131	0	24	410	7	1,924
	Asia	625	1,701	212	269	2	15	224	9	3,057
	Other	89	174	25	3	0	11	106	0	408
	Total	1,258	3,300	481	598	2	53	850	25	6,567[1]
Trademarks	Japanese	284	478	1,243	36	656	278	364	63	3,402[1]
	Overseas	523	1,269	820	96	16	43	512	8	3,287

1 May not equal to sums of individual totals due to sharing of certain IP rights among more than one segment.
2 Overseas applications for a single patent family are counted as one.
3 Others: Asahi Kasei Engineering Corp.

Strategic IP Management

Management of IP Rights

The acquisition, maintenance, and enforcement of IP rights are performed in accordance with the Asahi Kasei Group Intellectual Property Management Regulations based on an understanding that IP is essential for business profitability.

Once IP is identified in R&D, researchers, liaison personnel, and technical information specialists work in concert to acquire IP rights. Application procedures and the storage and management of IP information are almost fully computerized, enabling the swift exchange of information with researchers and IP law firms located around the world. We work in close coordination with IP law firms as important strategic partners in the management of IP.

Managing Trade Secrets and Preventing Unauthorized Technology Outflow

Thorough management of trade secrets and other confidential information in the Asahi Kasei Group is performed in accordance with its Secrecy Maintenance Regulations. Information in digital format is managed in accordance with Basic Regulations for Information Systems and information about individual people is managed in accordance with the Guideline for Personal Information Management. The Asahi Kasei Group implements strict measures to prevent unauthorized or unintentional outflow of technological information and know-how in accordance with its basic policy and management standards for prevention of technology outflow. The Asahi Kasei Group also applies internal guidelines summarizing related precautions to take when entering business overseas as well as procedures to ensure the preservation of prior-use rights in China.

A wide range of education and training measures are employed to raise awareness and understanding regarding such issues among personnel.

Corporate Brand Strategy

The corporate brand "Asahi Kasei" has been registered in 76 countries, and the current Group Logo combining "Asahi" with "KASEI" in upper case has been used since 2007. The Group Logo is an expression of innovation, and is designed to promote correct pronunciation. In the growing market of China, Chinese characters for "asahi" and "kasei" are added to the logo to enhance recognition of the Asahi Kasei brand.

The Group Logo and Company Logotype represent the identity and reliability of the Asahi Kasei Group. We have established a Group Emblems Guideline to ensure unified usage around the world within a defined style, format, and application range. The unified global Asahi Kasei Group identity is further reinforced by our Information Disclosure Policy and Information Disclosure Regulation requiring compliance with the Group Emblems Guideline. To confirm adherence to our established brand management standards, Corporate Communications reviews the content of exhibits, advertisements, and external announcements before they are made public.

Group Logo

AsahiKASEI

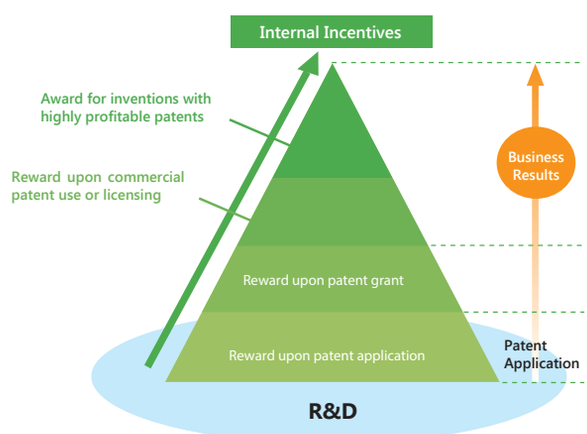
Chinese Group Logo

AsahiKASEI
旭化成

Incentives for Innovation

Incentives for employee innovation include lump-sum rewards upon application for and grant of patents as well as commercial patent use or licensing, and special rewards for inventors who make exceptional contributions to business operations. In April 2005, our invention reward system was amended to eliminate any theoretical limits on rewards and to reward inventors when a patented invention is commercialized. Such incentives serve to focus the minds of our young researchers on the objective of obtaining IP rights and further promote inventions which result in commercialization. For researchers based outside of Japan, we have separate incentive systems tailored to the law and customs of each country. These systems are continuously reviewed, with further revisions made as appropriate in accordance with the times and as deemed fair and effective to foster greater motivation to obtain IP rights which make valuable contributions to operations in line with the IP strategy of each business.

System to Reward Innovation (in Japan)



Human Resource Development

Recognizing human resources as an essential key to the execution of its IP strategy, the Asahi Kasei Group implements a comprehensive range of measures for the education and training of personnel in matters related to IP. The systematic program begins with orientation for new employees, and includes uniform training sessions for technical personnel and for marketing personnel throughout the Asahi Kasei Group. In addition, "e-learning" programs are made available on the corporate intranet to enable personnel to further enhance their practical knowledge related to IP rights.

Drivable concept car AKXY ™

In May 2017, Asahi Kasei and GLM Co., Ltd., an electric vehicle manufacturer, have completed a jointly developed concept car called AKXY™ showcasing a wide array of automotive-related materials and technologies from various Asahi Kasei businesses, focused on contribution to safety, comfort, and the environment.

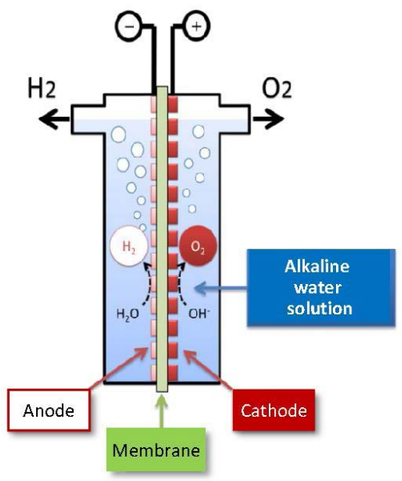
AKXY™ is equipped with a wide variety of Asahi Kasei materials, components, and systems, numbering 27 products in all, most of them available for adoption in mass-produced vehicles, including engineering plastics to replace metal and enable vehicle weight reduction, artificial suede for seats with superior comfort, and an in-car communication system utilizing various speech-processing technologies.

The car is additionally equipped with cutting edge technology that has potential for commercialization in line with automotive industry trends for safe driving and accident prevention, including a contactless vital sign sensing system that is able to detect the pulse of drivers without their being aware of it, and CO_2 sensors to monitor the in-car environment.

Demonstration plant for alkaline water electrolysis system

Utilizing Asahi Kasei's world-leading core technology, this alkaline water electrolysis system achieves the world's highest energy efficiency on a commercial scale. The system produces CO_2-free hydrogen from renewable energy such as solar and wind power generation. Asahi Kasei aims to contribute to the achievement of a hydrogen energy based society in the future.

Schematic diagram



Major External Commendations

Fiscal Year	Commendation	Organization	Title
2016	NIMS Award	National Institute for Materials Science (NIMS)	Development of Lithium-ion Battery
2015	Medal with Purple Ribbon	Government of Japan	Development of Electronic Compass and Automatic Adjustment Method
	National Commendation for Invention the Prize of the Chairman of HATSUMEI KYOKAI (JIII)	Japan Institute of Invention and Innovation	Development of gold–nickel oxide (Au–NiOx) nanoparticle catalysts with a core-shell structure
2014	Heroes of Chemistry Award	American Chemical Society	Non-Phosgene Polycarbonate (PC)
	The Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology Prizes for Science and Technology	Ministry of Education, Culture, Sports, Science and Technology	Development of Electronic Compass and Automatic Adjustment Method
2013	The Okochi Memorial Technology Prize	Okochi Memorial Foundation	Development of production technology for virus removal filters and the establishment of a market for them
	The CSJ Award for Technical Development	The Chemical Society of Japan	Development and commercialization of gold–nickel oxide (Au–NiOx) nanoparticle catalysts with a core-shell structure for methyl methacrylate (MMA) production
	The Charles Stark Draper Prize	The National Academy of Engineering (US)	Engineering of the rechargeable lithium-ion battery that enables compact, lightweight mobile devices
	The Global Energy Prize	Global Energy Partnership (RU)	Invention of Rechargeable Lithium-Ion Battery, which is An Essential Element for Mobile Electronic Devices, Electric Vehicles and Hybrid Electric Vehicles

Local Commendations for Invention (Japan Institute of Invention and Innovation)

Fiscal Year	Commendation	Area	Title
2017	The Prize of the Chairman of Kanagawa Institute of Invention and Innovation	Kanto	Development of Functionalized SBR for Fuel-efficient Tire Tread
	The Encouragement for Invention Prize	Kanto	Digital/Analog Converter and Control Method Thereof
2016	The Encouragement for Invention Prize	Kanto	Hydrogenated Block Copolymer
	The Encouragement for Invention Prize	Kyushu	Highly Functional Cellulose Composite
	The Encouragement for Invention Prize	Kyushu	Body Fluid Treating Device of Hollow Fiber Membrane Type
2015	The Prize of the Chairman of Kyushu Industrial Technology Center	Kyushu	Blood Processing Filter
	The Prize of the Chairman of Mie Institute of Invention and Innovation	Chubu	Stretched Laminated Film and Bag
	The Encouragement for Invention Prize	Kanto	Process for Producing Long Chain N-Acyl Acidic Amino Acid
	The Encouragement for Invention Prize	Kanto	Sealing Material for Long-life Coating
	The Encouragement for Invention Prize	Kanto	Evaluation System for Used House
2014	The Encouragement Prize of Invention by the Minister of Education, Culture, Sports, Science and Technology	Kyushu	Cellulose Powder
	The Prize of Okayama Prefectural Governor	Chugoku	Method for Producing Ethylene and Propylene
	The Encouragement for Invention Prize of the Chairman of the Japan Patent Attorneys Association	Kanto	Polymer Electrolyte Membrane Having High Durability
	The Encouragement for Invention Prize	Kanto	Flame Retardant Aromatic Polycarbonate Resin Composition
	The Encouragement for Invention Prize	Kanto	Polyphenylene Sulfide Resin Composition
2013	The Encouragement for Invention Prize	Kanto	Modified Conjugated Diene Polymer for Tire Tread
	The Prize of Okayama Prefectural Governor	Chugoku	Process for Stabilizing Oxymethylene Copolymer