

Denka

Denka Report
2019
Integrated Report

Denka Company Limited
Possibility of chemistry

Our Corporate Philosophy

Following the celebration of its centennial in 2015, Denka established The Denka Value in 2016. This corporate philosophy is serving as the foundation for all of our business activities as we move forward over the next 100 years. The Denka Value consists of the Denka Mission, which identifies our highest mission, and the Denka Principles, a set of precepts aimed at guiding the actions of all Denka Group employees.

Corporate Philosophy

The Denka Value

Denka Mission

“Taking on the challenge of expanding the possibilities of chemistry to create new value and contribute to sound social development.”

Denka Principles

We:

- Boldly confront challenges with determination and sincerity.
- Think and take action today with the future in mind.
- Deliver new values, and inspire customers through innovative monozukuri.*
- Respect the environment and create a cheerful workplace that prioritizes safety.
- Contribute to a better society, whilst taking pride in being a trusted corporate citizen.

* Japanese-style craftsmanship

■ Editorial Policy

The Denka Report 2019 printed brochure is aimed at providing our stakeholders, including shareholders and investors, with a robust communication tool that focuses on conveying what we have been doing to create new value over the medium to long term from the viewpoint of addressing environmental, social and governance (ESG) issues.

In addition, we strive to maintain the comprehensive and timely disclosure of our CSR-related corporate information by updating relevant sections of our website.

■ Coverage

Fiscal 2018 (April 1 2018 through March 31, 2019) in principle; this report includes additional information on some initiatives undertaken subsequent to the fiscal 2018 year-end while presenting data on numerical targets for and performance statistics from the past several fiscal years.

Date of publication: October 15, 2019

■ Scope

In general, this report encompasses topics on the Denka Group's business sites within the scope of consolidation. However, some articles are based on data gleaned outside the scope of consolidation. These articles individually specify the organizations subject to reporting.

■ Guidelines

- The GRI Standards of the Global Reporting Initiative (GRI)
- The Environmental Reporting Guidelines 2018 of Japan's Ministry of the Environment
- The International Integrated Reporting Framework of the International Integrated Reporting Council (IIRC)

■ Inquiries

CSR & Corporate Communications Dept., Denka Company Limited
 TEL. +81-3-5290-5511
 FAX. +81-3-5290-5149
 Nihonbashi Mitsui Tower, 1-1, Nihonbashi-Muromachi 2-chome, Chuo-ku, Tokyo 103-8338, Japan
<http://www.denka.co.jp/eng/>

■ Overview of the Denka Report 2019 and Other Supplementary Reporting Tools



1 The printed brochure is aimed at providing our stakeholders, including shareholders and investors, with a robust communication tool that focuses on conveying what we have been doing to create new value over the medium to long term from the viewpoint of addressing ESG issues.

2 We update reporting on relevant activities and detailed data that has not been included in the aforementioned editions, to this end maintaining the timely and comprehensive disclosure of our CSR-related corporate information via our website.

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Trajectory of Denka's Growth

Taking on the Challenge of Expanding the Possibilities of Chemistry for More than a Century

Ever since its founding, Denka has created a wealth of products via the application of calcium carbide production technologies and pursued the ultimate in *Monozukuri* (Japanese-style craftsmanship) while changing its output in response to the needs of the times.

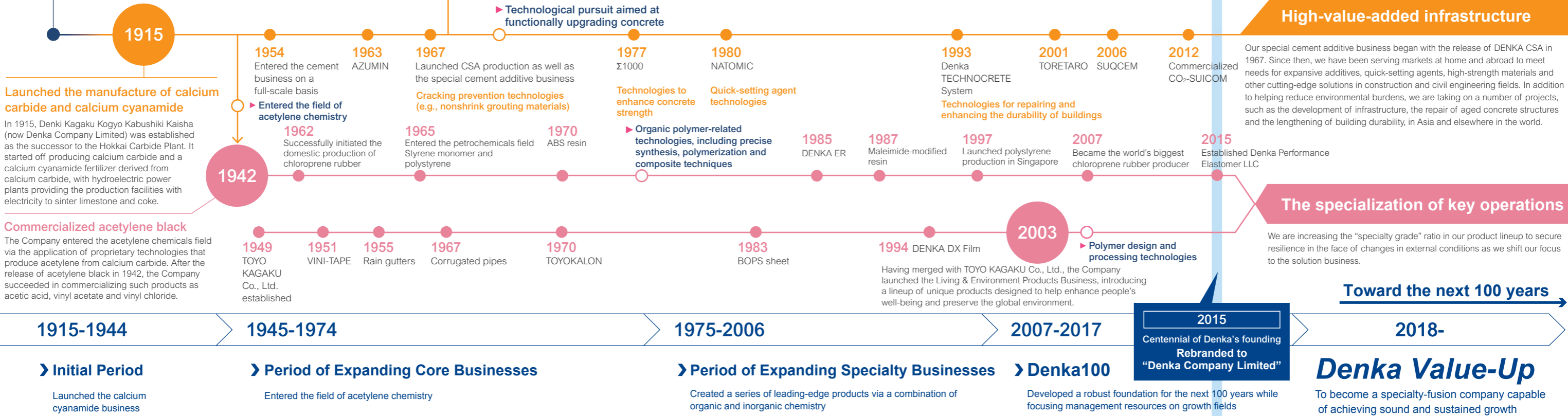
Dr. Tsuneichi Fujiyama, the pioneer of the carbide industry in Japan



In 1902, at a plant in Sankyojawa, near Sendai city, Dr. Fujiyama became the first in Japan to successfully manufacture calcium carbide. This was only about ten years after the world's first trial production of calcium carbide by a Canadian chemist. He also introduced technology for the manufacture of calcium cyanamide (nitrogenous limestone) from calcium carbide to Japan. Moreover, he himself developed a steady stream of new technologies and opened the Hokkai Carbide Plant in the city of Tomakomai, Hokkaido, in 1912. His achievements greatly influenced the subsequent growth of Japan's chemical industry.

Made an entry into the pharmaceutical field

Having acquired shares in the Research Institute for Biology, Physics and Chemistry, which was established in 1950 (subsequently renamed Toshiba Kagaku Kogyo in 1951 and, currently, Denka Seiken Co., Ltd.), the Company made an entry into pharmaceutical-related fields, including vaccines and diagnostic reagents.



Healthcare

Leveraging its arsenal of unique technologies, which are backed by a long track record spanning nearly 70 years, Denka Seiken has created epoch-making pharmaceutical products, such as vaccines and diagnostic reagents. Looking ahead, the Denka Group will strive to help enhance people's quality of life and, to this end, deliver solutions to counter infectious diseases and lifestyle diseases while providing cancer drugs and cancer remedy information services.

The environment and energy

Our research into high-temperature control and nitride technologies led to the creation of fine ceramics that, in turn, helped us develop an array of unique solutions in the field of electronic materials, including insulation as well as thermally and electrically conductive and heat-resistant materials. Today, our products are used for a broad range of applications, such as automobiles, railcars, displays and mobile devices, to help achieve technological innovation in terms of energy saving, miniaturization, weight reduction and functional upgrading.

High-value-added infrastructure

Our special cement additive business began with the release of DENKA CSA in 1967. Since then, we have been serving markets at home and abroad to meet needs for expansive additives, quick-setting agents, high-strength materials and other cutting-edge solutions in construction and civil engineering fields. In addition to helping reduce environmental burdens, we are taking on a number of projects, such as the development of infrastructure, the repair of aged concrete structures and the lengthening of building durability, in Asia and elsewhere in the world.

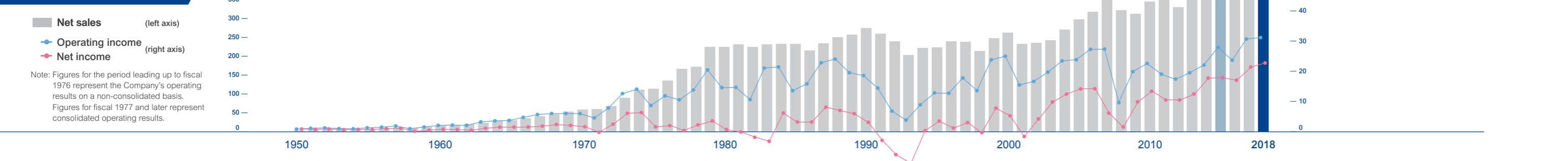
The specialization of key operations

We are increasing the "specialty grade" ratio in our product lineup to secure resilience in the face of changes in external conditions as we shift our focus to the solution business.

Toward the next 100 years

2015
 Centennial of Denka's founding
 Rebranded to "Denka Company Limited"

Trend in Operating Results



The Denka Value (corporate philosophy)

Denka Mission

Denka Principles

The Denka Value-Up (Management Plan)

(fiscal 2018 – fiscal 2022)

Social Issues

Six types of capital

Contribute to sound social development



Healthcare

The graying of society and resulting surges in medical expenses in addition to growing risks of infectious disease pandemics due to global warming and the formation of an international traffic network



The environment and energy

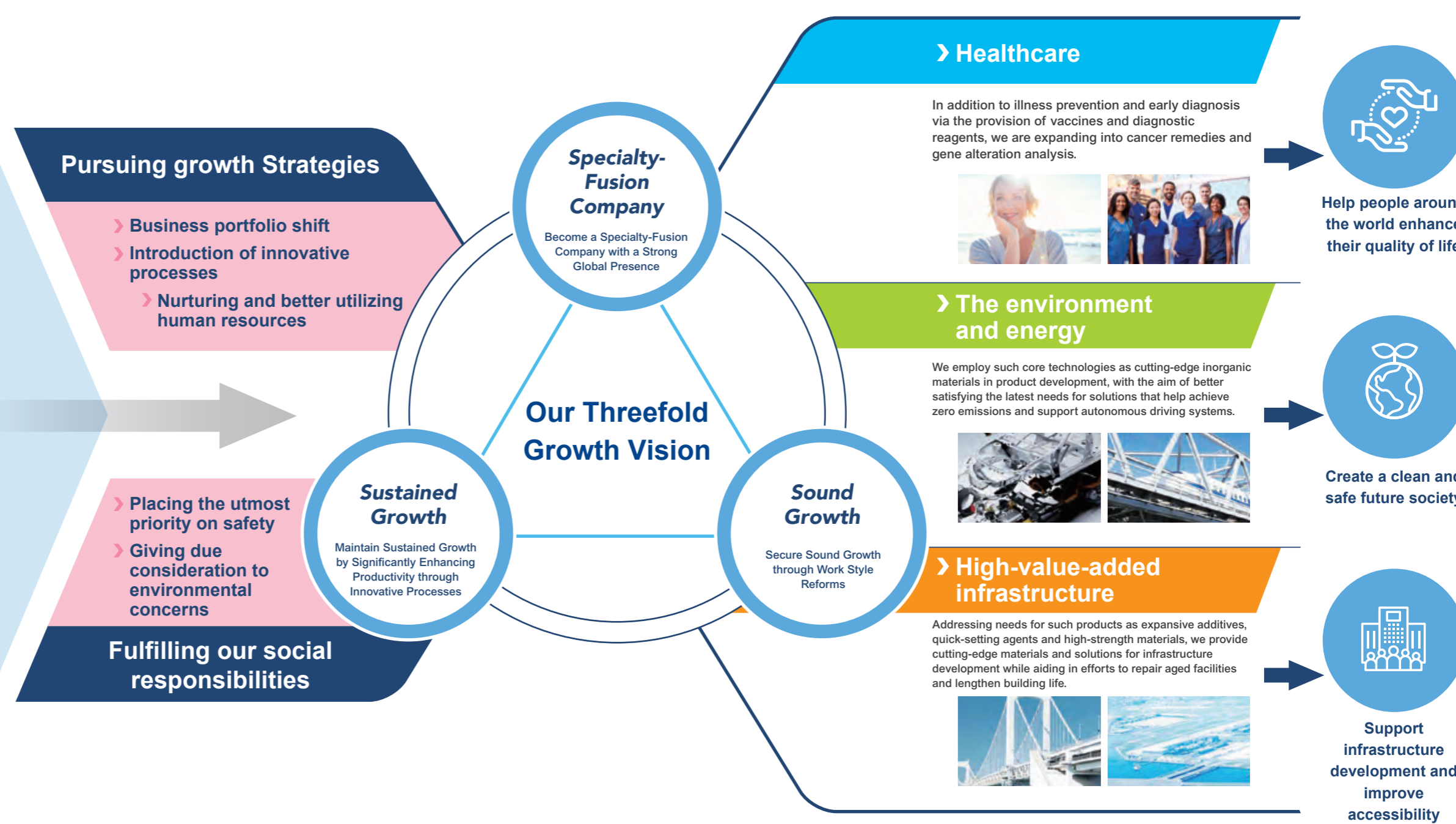
Growing calls for countermeasures against global warming, soil, air and marine pollution and resource depletion as well as the safety of transportation systems



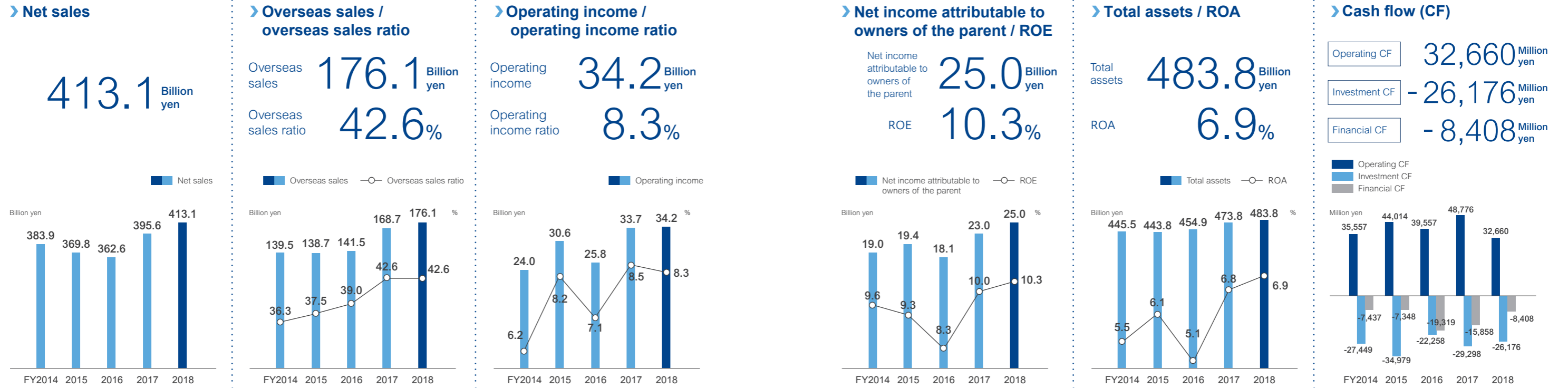
High-value-added infrastructure

Need for countermeasures against aging infrastructure and new infrastructure development as well as the need to secure the sustainability of agriculture and a safe and nutritious food supply

- Intellectual capital**
High-temperature calcining technologies developed through our inorganic chemistry-related endeavors in addition to organic and inorganic material composite technologies, polymer synthesis and resin processing technologies and antigen and antibody reaction technologies for advancing infectious disease countermeasures
- Natural capital**
Company-owned power generation facilities, including hydroelectric power plants
- Manufacturing capital**
Manufacturing facilities boasting superior energy efficiency, such as cement production facilities that contribute to a recycling-oriented society
- Human capital**
A corporate culture that sincerely addresses customer needs and seeks to propose solutions through manufacturing
- Social capital**
Across-the-board involvement in open innovation that aims to help resolve issues society is confronting via industry-academia-government collaboration
- Financial capital**
Ability to execute strategic investment and secure robust shareholder returns in a well-balanced manner



Fiscal 2018 Financial Highlights



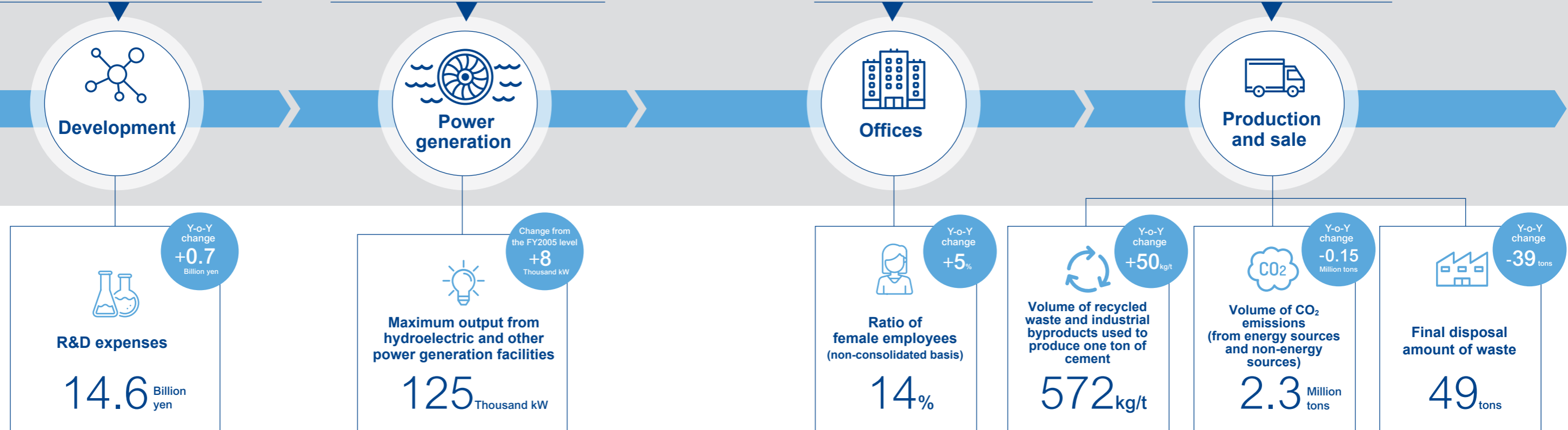
Fiscal 2018 Non-Financial Highlights

Promoting open innovation, we are developing new products and technologies that contribute to a sustainable society.

To produce clean energy, we are employing a total of 15 hydroelectric power plants.

We maintain a total of 28 domestic facilities serving as key business bases while boasting a global network encompassing 32 bases in Asia, Europe, the United States, the Near and Middle East and other regions.

Giving due consideration to our environmental footprint, we pursue sustainable manufacturing operations to deliver safe and reliable products.





Taking on the Challenge of Expanding the Possibilities of Chemistry via the Specialization of Our Key Operations

Manabu Yamamoto

Representative Director,
President & CEO

1. Our Social Mission

Having started out as a calcium carbide and calcium cyanamide producer in 1915, Denka has delivered a variety of products that have contributed to social development while furthering high-temperature control and other technologies. For example, Denka's latest product lineup includes chloroprene rubber (CR), a highly functional elastomer used for such applications as automobile parts. In 1962, Denka became the first in Japan to produce this material. Since then, we have been ceaselessly striving to improve our CR technologies and develop product applications. We continue to successfully command a position as a leading CR supplier and currently boast a 40% share in the global market.

Today, society is being affected by drastic technological advancement, a growing shift in demographic structure, rapid urbanization and other major changes taking place in countries around the globe, including Japan. As the possibility of disruptive change lies latent in every corner of society, a number of corporations will face the growing need for unconventional business models in order to adapt to the creative destruction of markets. I believe that, in the midst of such disruption, Denka will be expected to fulfill even important roles as a chemical material manufacturer.

In 2015, we changed our company name from DENKI KAGAKU KOGYO KABUSHIKI KAISHA to Denka Company Limited in conjunction with the celebration of our centennial. In the next year, we established The Denka Value, a corporate philosophy, while renewing our commitment to fulfilling our mission of "Taking on the challenge of expanding the possibilities of chemistry to create new value and contribute to sound social development."

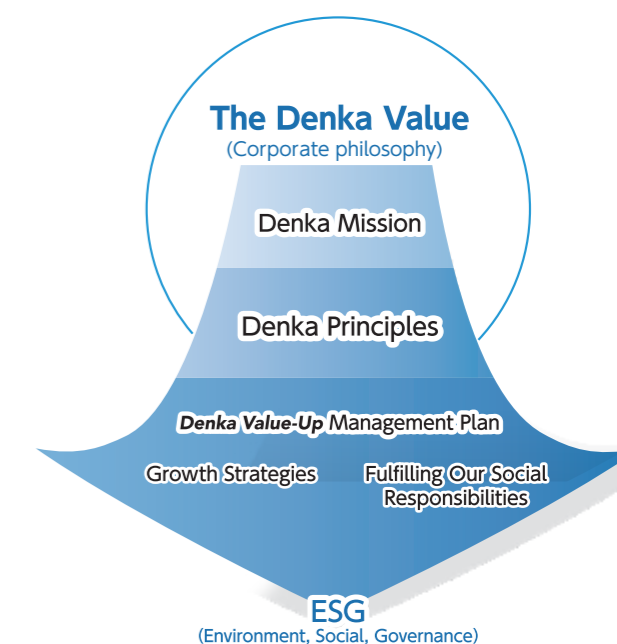
Our former company name represents our origins in electrochemistry, a type of manufacturing virtually unknown at the time of launch as the use of electricity was not yet widespread in Japan. Our founders therefore needed to somehow secure a quantity of power from in-house sources. Thus, they proceeded to construct a robust network of hydroelectric power plants and endeavored to improve their power generation capacity while ceaselessly improving the energy efficiency of production systems. Considering that the reduction of energy consumption and the use of renewable energy are among the most pressing social issues today, we believe

that we have a social mission to take full advantage of Denka's accumulated expertise in these fields in order to advance its technologies that focus on environmental concerns.

In line with the Denka Value-Up management plan, a five-year plan launched in April 2018, we have identified a threefold growth vision of becoming a "Specialty-Fusion Company" capable of achieving "Sustained Growth" and "Sound Growth." We have also specified CSR materiality issues that Denka must address in addition to practicing an ESG-oriented management approach with strong emphasis on "placing the utmost priority on safety," "giving due consideration to environmental concerns," "nurturing and better utilizing human resources" and "making social contributions."

At the same time, we are promoting two growth strategies aimed at ensuring significant business expansion on a global basis.

First, we are promoting a business portfolio shift. The purpose of this is to accelerate our corporate growth by keeping the focus of our management resources on specialty businesses. We have defined a "specialty" business as one that meets or has the potential to meet the following conditions in the near future: 1) being consistent with our commitment to addressing ESG issues; 2) boasting distinctive strengths and product value;



3) possessing resilience to changes in external factors; and 4) commanding an industry-leading market share. Having identified healthcare, the environment and energy and high-value-added infrastructure as three priority fields, we are striving to raise the ratio of specialty businesses to our entire business portfolio from 54% in fiscal 2018 to 90% by the end of fiscal 2022 (based on operating income ratio). To that end, top management is strongly committed to promoting a thoroughgoing transition to specialty businesses. In this light, I am determined to do my best to raise employee awareness through my leadership and encourage all Group members to focus on the continuous creation of specialty businesses.

In the healthcare field, we decided to establish a new facility for manufacturing liquid influenza vaccine on the premises of Denka Seiken's Niigata Plant to boost its supply capacity. Our plans also call for merging with Denka Seiken in April 2020 with the aim of expanding our healthcare-related operations.

In the environment and energy field, we decided to augment our capacity to produce Denka's unique thermal solution products, such as silicon nitride ceramic substrates and spherical alumina. These offerings are expected to contribute to the popularization of electric vehicles and other eco-friendly cars as well as the advance of autonomous driving technologies.

In the high-value-added infrastructure field, we are engaged in the global marketing of special cement additives, which are essential to the construction of tunnels and other high-strength infrastructure. We are also promoting solutions aimed at addressing the aging of buildings and other structures.

As such, our endeavors are making steady progress in these three priority fields. Furthermore, as part of efforts

to specialize our key operations, we made a full-scale entry into the biostimulant* market. Biostimulants are expected to help resolve pressing global food issues, including food supply shortages and the negative impact of global warming and other climate change phenomena that cause farmers to experience serious crop damage. Drawing on our longstanding accumulation of technological expertise in agricultural products, we will develop and deliver advanced solutions to the market.

Second, we are engaged in the introduction of innovative processes, another important growth strategy under Denka Value-Up, with a newly established department charged with accelerating digitization and big data utilization spearheading the production, R&D and operational process reforms currently under way at business units across the Group. For example, an AI-driven production management system was brought online at the Chiba Plant and at a plant run by a Group subsidiary in Singapore. Meanwhile, the Omi Plant (Itoigawa City) completed the "Omi Innovation Hub," a new multi-purpose facility boasting a futuristic layout. This facility has already begun contributing to integrated, more functional plant operations. Over the course of a five-year period wrapping up at the end of fiscal 2022, we are determined to invest ¥15 billion in process reforms via the introduction of cutting-edge ICT and other solutions to develop a working environment that helps employees to create a constant stream of innovation.

* According to the website of the Japan Biostimulant Association, biostimulants are a new technology that controls abiotic stresses imposed on plants and thereby reduce damage inflicted on them due to climate or soil conditions to help cultivate healthy crops.

2. Securing More Robust Foundations for Fulfilling Our Social Mission

As a chemical manufacturer, we consider securing operational safety to be a matter of the utmost importance. We have therefore made prioritization of safety foundational to all business activities. Accordingly, we promote a comprehensive set of initiatives aimed at preventing the occurrence of accidents at all workplaces. These initiatives include unifying the risk assessment standards to be applied at production frontlines, investing capital to advance safety measures, enhancing safety education training facilities and cultivating those who are charged with providing such education.

In addition, Denka formulated its environmental policies to ensure that it contributes to the realization of Japan's national targets, which are based on goals specified by the Paris Agreement, a framework for guiding international efforts aimed at addressing climate change issues in 2020 and beyond. As we handle energy-intensive operations, we will fully take advantage of our power generation network supported by 15 hydroelectric power plants to help realize a carbon-free society. Simultaneously, we are considering participation in TCFD, SBT and other international climate change-related initiatives. Moreover, we will engage in R&D focused on carbon dioxide utilization, applying a unique perspective with the aim of contributing to the accomplishment of the Paris Agreement's goal of keeping the global temperature rise in this century to less than 2°C. Furthermore, in the course of cement production, we are accepting an even broader range of waste from communities in which operate to promote collective efforts to reduce environmental footprints while upgrading our waste recycling facilities. We are also developing styrene-based food packaging materials that can be processed using a relatively smaller volume of resources. Moreover, we are addressing the problem of marine plastic pollution. Fulfilling our social responsibilities through these actions, we are helping create a recycling-oriented society.

We are promoting specialization in all aspects of our operations, including our business structure, technological development and cultivation of human resource. We believe that, among these, human resources are the most important component of the foundation supporting our constant creation of specialty businesses. Accordingly, we are striving to assist employees in their autonomous

growth and spontaneous career development through the revision of staff evaluation systems and the enhancement of human resource development programs. We will also continue to push ahead with work style reforms aimed at accommodating diverse human resources and working styles.

To enhance corporate governance, we have transitioned from a "Company with an Audit & Supervisory Board" to a "Company with an Audit & Supervisory Committee" in January 2019. We have, to date, endeavored to develop a robust governance structure capable of ensuring fair and transparent management by, for example, separating supervisory and execution functions via the introduction of an executive officer system and appointing three outside directors and two outside members of the Audit & Supervisory Committee. In the face of recent rapid changes in the market environment, we believe that Denka must have a structure for enabling swifter decision making. With this in mind, the aforementioned transition entailed appointing individuals who serve as Audit & Supervisory Committee members and are allowed to cast a vote at Board of Directors meetings. We are confident that this move will help us strengthen the Board of Directors' supervisory functions and thereby enhance our corporate value.

In fiscal 2018, our consolidated operating income was ¥34.2 billion, falling short of the estimate of ¥36.0 billion announced at the beginning of the fiscal year due to such factors as U.S-China trade tensions. However, this figure still represents a record high for us and we also recorded our highest-ever consolidated net sales. Taking these operating results into account, we believe that, in the first year of Denka Value-Up, we were able to make steady progress in our efforts to create an even stronger company that is resilient against changes in the external environment.

Through the implementation of Denka Value-Up, we will create new value and make significant contributions to the development of society as a whole. That's how we are becoming a specialty-fusion company with a strong global presence.

We sincerely ask for your ongoing support for our Group operations.



The Omi Innovation Hub, a new multi-purpose facility completed on the Omi Plant's premises on October 25, 2018



President Yamamoto (at left) and Professor Kanie at Denka's Head Office in June 2019

Denka's Manufacturing Operations: Creating Value for the Future

Professor

Norichika Kanie

Graduate School of Media and Governance,
Keio University

Manabu Yamamoto

Representative Director, President & CEO,
Denka Company Limited

The Denka Value, Denka's corporate philosophy, is in accord with the spirit of the United Nations Sustainable Development Goals (SDGs) that were set for 2030 to guide international efforts aimed at achieving a sustainable society. In this dialogue, we invited Professor Kanie, who is Japan's leading SDG researcher, to share his insights with regard to what sustainability initiatives businesses should take on.



SDGs Serve as a Compass

Yamamoto: I think that the SDGs are a set of well-thought-out goals serving as a compass for businesses seeking to contribute to sustainability. Japan's chemical industry has a number of corporations that are similar in size to Denka, each boasting unique and promising technologies that could constitute a significant social contribution. However, such corporations might find it difficult identifying how to best utilize their technologies in the context of sustainability. I believe that the SDGs will greatly assist them in this identification.

Kanie: Exactly. As the pursuit of the SDGs helps corporations determine their direction, the SDGs can be likened to a compass. The most important point about the SDGs is that these future goals have been agreed upon by all UN member countries around the globe. Accordingly, I think the SDGs effectively represent what our society will be like in the future.

Yamamoto: I believe that in order for Denka to achieve growth, it must pursue specialization. We are therefore specializing our businesses in a way that addresses needs of people around the world, aiming to deliver technologies and products that improve their living

standards and bring greater value to them. I think this coincides with the concepts underlying the SDGs.

Kanie: That's right. Also, the SDGs can be utilized to expand the scope of fields in which Denka can contribute to society in the way you discussed. For example, a combination of highly functional infrastructure and energy-saving solutions may give rise to unconventional ideas and businesses. The SDGs consist of a total of 17 goals encompassing a broad range of fields. These goals allow businesses to choose from a variety of options with regard to their approaches to sustainability. The pursuit of the SDGs can also involve supply chains. In this light, I praise Denka's process reforms undertaken as part of an overarching strategy.

Yamamoto: Currently, we are developing a biostimulant* technology that is expected to simultaneously help increase food production volume and reduce environmental burdens. I believe this is exactly the kind of technology supporting the realization of the SDGs. In Japan, a number of chemical companies boast considerable accumulated technologies backed by long track records spanning more than 100 years. Although I suspect that some of their technologies have not yet realized their full potential, I expect the SDGs to provide businesses with insights into how to utilize such technologies.

* According to the website of the Japan Biostimulant Association, biostimulants are a new technology that controls abiotic stresses imposed on plants and thereby reduce damage inflicted on them due to climate or soil conditions to help cultivate healthy crops.

Taking Full Advantage of the Period Leading up to 2030

Kanie: What is good about the SDGs is that they represent long-term goals for 2030. We can take advantage of time. Even though the SDGs will not be realized right away, businesses can still spend decades working toward the betterment of society. It is only to be expected that they will face some criticism about what has not been done or what is lacking. Nevertheless, it is important for businesses to clarify their commitment to taking on forward-looking initiatives aimed at realizing the SDGs.

Yamamoto: Indeed, we can rely on the SDGs to identify our future ideals as they are supported by the international consensus. This is quite helpful as we can be confident about our conclusions on Denka's long-term visions.

Kanie: Today, ESG-oriented investment is attracting growing public interest. Because of this, stakeholders' attention is being directed to the long-term visions businesses are now pursuing. I also believe that businesses taking a forward-looking stance toward sustainability will attract the support of a growing number of stakeholders.

Yamamoto: In 2016, we established The Denka Value, clarifying our corporate philosophy aimed at ensuring that all of our activities will eventually help us improve our track record in environmental, social and governance (ESG) aspects. Currently, we are striving to ensure that this philosophy is embraced by all employees. Although we have previously struggled with finding correlations between our initiatives associated with CSR, materiality issues and ESG issues, I think the SDGs have helped us smoothly coordinate these initiatives.

Kanie: While the SDGs encompass matters associated with ESG, they are focused on identifying universal goals in addition to meticulously specifying fields in which businesses can make contribution. I find it encouraging that Denka utilizes the SDGs in the course of putting its



corporate philosophy into practice. However, it is quite challenging to ensure that such a philosophy is embraced throughout the organization. I understand this kind of challenge, and believe that both businesses and researchers, including myself, must play their part in collective efforts aimed at communicating the importance of sustainability not only to a circle of major corporations but also a broader business community, including small and medium-sized corporations. Once employees understand the significance of their duties in terms of contribution to society, however, I think they will be more motivated than ever before.

Yamamoto: I have sometimes seen frontline workers who are only minimally informed about how their products are actually used. To facilitate their understanding, I have asked managers to provide their staff with robust information about how their products contribute to society.

Kanie: I have heard that researchers engaged in technological development often tend to get lost in the details and lose the bigger picture of what they are doing. Management should help them incorporate a long-term perspective so that they clearly understand what they are contributing through their duties. This type of input affects working styles and, of course, helps to motivate them even more.

Yamamoto: Denka formerly maintained a more traditional focus, looking simply to achieve growth in terms of size and cost reductions. However, this approach has proven ineffective in the face of global competition. Denka has thus positioned specialization as an essential strategy that will empower it to thrive well into the future. However, any success due to specialization can quickly become moot if

we fail to keep on working on said specialization. Therefore, we also need to nurture human resources capable of taking on this endeavor. To this end, we are pushing ahead with thoroughgoing process reforms and work style reforms by employing AI, IoT and other advanced technologies. In particular, our process reforms, which aim to standardize procedures and make it easier to check operational status, are also expected to greatly help us promote diversity.

Kanie: In short, Denka began placing stronger focus on quality to compete against quantity. Incidentally, a growing number of consumers have been shifting their focus from quantity to quality. Furthermore, although MDGs, the precursors of the SDGs, placed relatively stronger emphasis on quantity, the SDGs are obviously focused on quality. Although it is well understood that superior quality lends a manufacturer competitive advantages, Denka's pursuit of specialty goes in tandem with its policy of employing a combination of diverse technologies. While the fear with specialization is that excessive focus may result in a lack of flexibility, Denka is avoiding this pitfall as it strives to simultaneously acquire strength and realize the potential of its technologies via specialization.

Yamamoto: Denka had previously adopted a silo-based organizational structure and was almost unable to employ synergies arising from intersectional collaboration. Some of our technologies thus remained underutilized. Today, however, Denka is focused on boosting synergetic effects under keywords "collaboration" and "reform."

Kanie: Great. This is exactly the approach needed to facilitate organizational chemistry.

Norichika Kanie

Professor, Graduate School of Media and Governance, Keio University

Concurrently serving as a Senior Research Fellow at United Nations University Institute for the Advanced Study of Sustainability, Professor Kanie previously served as a lecturer and assistant professor at the University of Kitakyushu. He was also an associate professor at Tokyo Institute of Technology's Graduate School of Science and Engineering prior to assuming his current position. He has been appointed to a number of public positions, including as a member of the Japanese government's SDG Promotion Roundtable Meeting, the Cabinet Office's Council for Evaluating, Researching and Discussing Local Government SDG Promotion Initiatives, and the Ministry of the Environment's SDG Stakeholders Meeting.

Achieving Growth in Tandem with Stakeholders

Kanie: The SDGs have an important underlying policy of leaving no one behind. Although Denka has positioned healthcare as a priority field, its operations in this field represent a typical example of social contribution through business activities, considering that pharmaceuticals become more available in step with market growth. This will save an expanding number of human lives.

Yamamoto: In line with the Denka Value-Up management plan, we aim to become a specialty-fusion company capable of achieving sustained and sound growth. Specifically, "sound growth" means achieving corporate growth without sacrificing the happiness of any stakeholders. Moreover, we aim to achieve corporate growth while helping stakeholders thrive. This is our ultimate goal.

Kanie: The SDGs do not necessarily represent a business's performance targets. However, the SDGs serve as benchmarks that guide businesses concerned with



sustainability to accurately reach their genuine goals. The SDGs are just like a series of triangles painted halfway down a bowling lane to help players accurately aim for the pins. We have seen the increasing deterioration of the global environment along with a growing fear of resource depletion as well as global warming and other climate change phenomena. Taking these factors into account, the success of international efforts to be undertaken in 10 years from now will be extremely crucial to human society. I rate Denka highly as it aims to achieve sustained and sound growth via a variety of process reform initiatives while giving an eye to these circumstances.

Creating the Future of Denka

Yamamoto: Denka recognizes an imminent threat arising from environmental problems. Among these, Denka considers marine plastics to be a pressing issue that must be addressed. In addition, Denka operates cement production facilities. Although these facilities emit a volume of greenhouse gases, they also produce cement via the effective utilization of industrial waste. For every 1 million plus tons of cement manufactured, these facilities process 500,000 tons of industrial waste. We are considering how to better utilize their capabilities. Also, Denka's hydroelectric power generation facilities, which produce clean energy, supply nearly half the electricity consumed by its manufacturing operations. However, dependence on these energy sources may also expose Denka to an existential threat if the volume of rainfall fluctuates significantly due to climate change.

Kanie: The problems Mr. Yamamoto has mentioned, such as marine plastics and climate change, cannot be resolved by a single corporation. The SDGs also emphasize partnership. I would like to encourage Denka to act as part of cross-sector partnerships involving a variety of entities, such as governments and NGOs. Such partnerships will better position Denka to resolve these issues. Furthermore, I expect the new technologies or solutions that Denka creates in the course of said pursuits to become global standards. Generally, Japanese corporations are not good at establishing global standards compared with their peers in Europe and the United States. I hope that one day Denka plays a leading role in the worldwide popularization of innovative solutions that help resolve global problems.

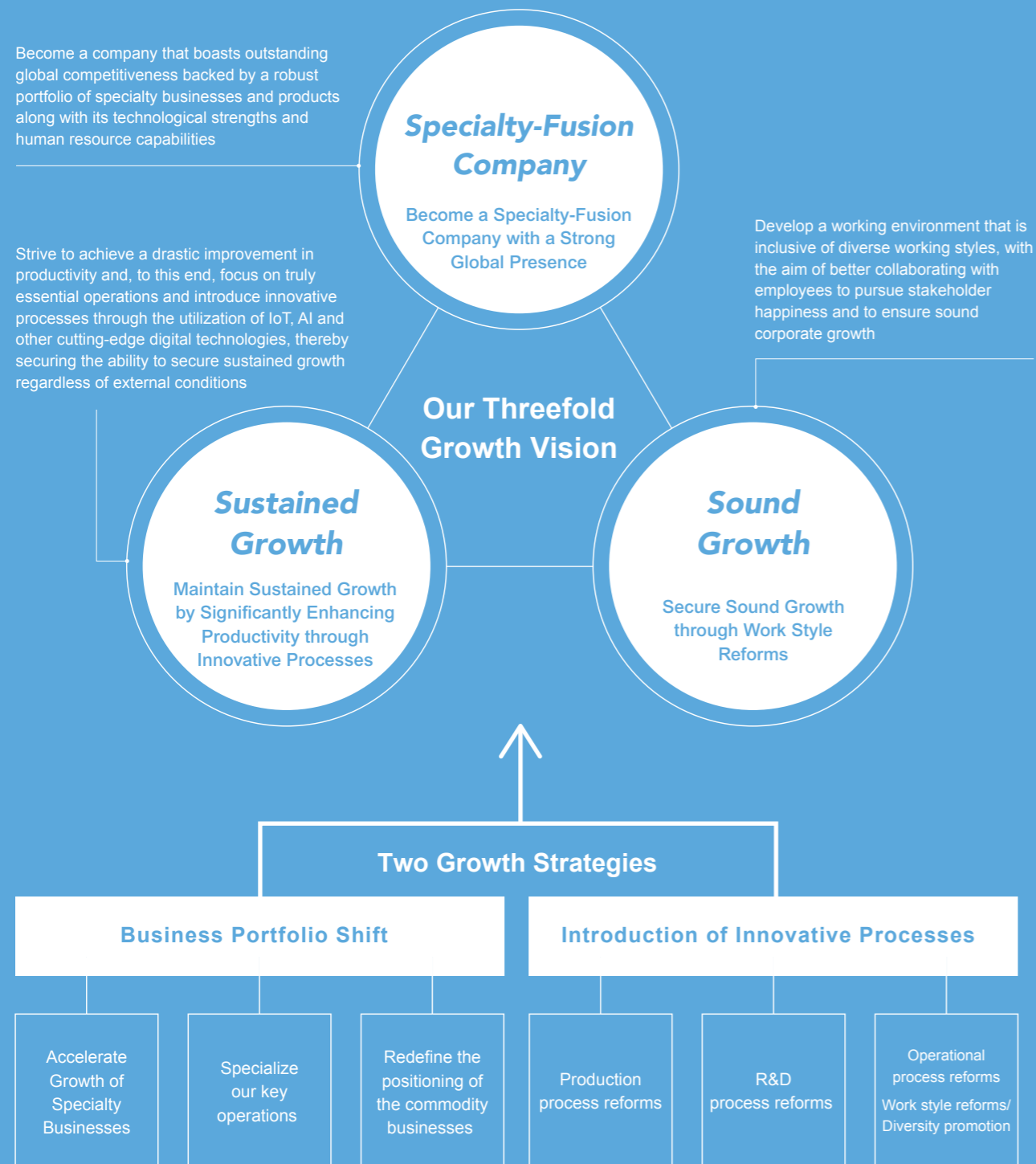
Yamamoto: Ideally, I would like our stakeholders around the world to be proud of having a relationship with Denka. This dialogue has bolstered my confidence that the SDGs will serve as a helpful tool guiding us toward this ideal. Looking ahead, we will utilize the SDGs to become a global company leading the way to the betterment of society.

(Held in June 2019 at Denka's Head Office)

Our Management Plan

Denka Value-Up

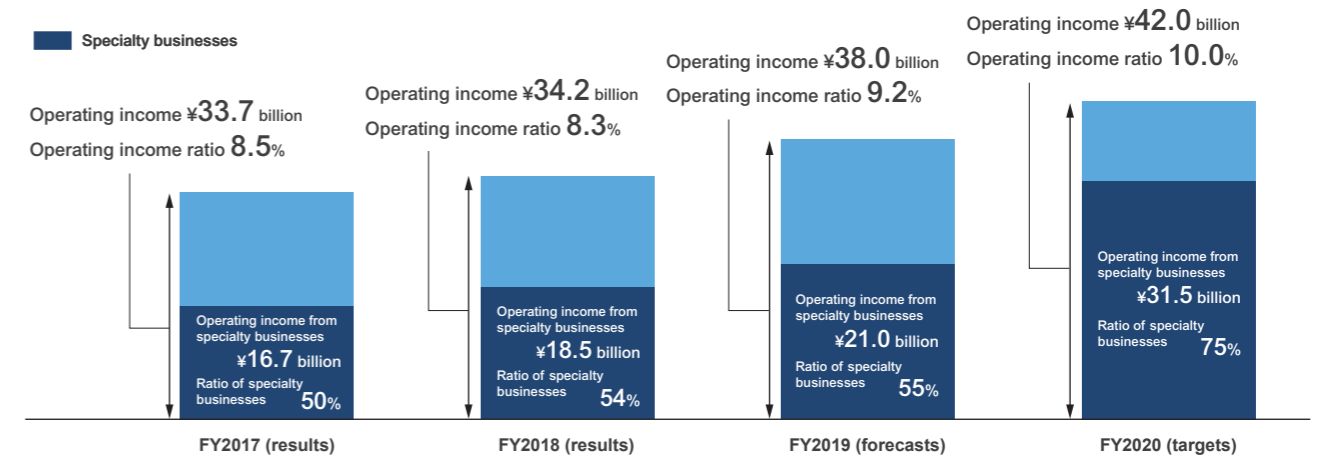
2018-2022



Numerical Targets under Denka Value-Up

In line with this management plan, we aim to achieve consolidated operating income of ¥42 billion and an operating income ratio of 10% or more in fiscal 2020. We also strive to raise the ratio of specialty businesses to 75% or more in the same fiscal year (based on operating income ratio).

In fiscal 2018, the first year of the management plan, our operating income stood at ¥34.2 billion, achieving a record high for the second consecutive year. Looking ahead, we will push ahead with specialization of our operations via the practice of Denka Value-Up growth strategies while expecting to make steady progress toward achieving our targets for fiscal 2020.



Resource Allocations

Executing strategic investment centered on specialty businesses, we are striving to realize "Sustained Growth" and "Sound Growth."

With regard to shareholder returns, we remain committed to a targeted total shareholder return ratio of 50%.

Simultaneously, we are placing ever stronger focus on cash dividends while flexibly carrying out share repurchases by giving due consideration to such factors as trends in stock prices.

Investment Plan

- We will invest a total of ¥200 billion over a five-year period.
- Breakdown
 - Strategic investment: ¥75 billion (¥15 billion/year)
Of which, investment in specialty businesses: ¥60 billion
 - Process reforms: ¥15 billion
 - Regular investment: ¥125 billion (¥25 billion/year)

Shareholder Returns

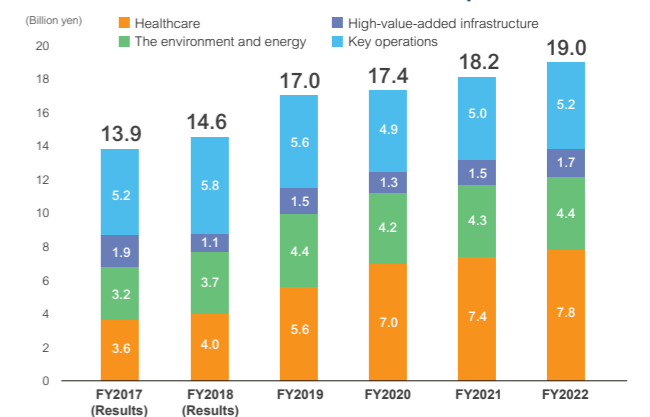
- We will remain committed to a targeted total shareholder return ratio of 50%.
- In addition to prioritizing cash dividends, we will flexibly execute share repurchases by giving due consideration to stock prices and other factors.
- Note: Total payout ratio = (Dividends paid + treasury stock purchased) / consolidated net income

R&D Plan

Policy

- We will expend a total of ¥90 billion in R&D over a five-year period.

Results and Forecasts for R&D Expenses



Fiscal 2018 Results

In fiscal 2018, R&D expenses for the entire Group totaled ¥14.6 billion.

Fiscal 2018 Achievements

In fiscal 2018, we paid an interim dividend of ¥60 per share and a year-end dividend of ¥60 per share. With full-year dividends totaling ¥120 per share, the dividend payout ratio stood at 42%.

Business Portfolio Shift



Accelerate Growth of Specialty Businesses*

We will reinforce the focus of our management resources on three priority fields (healthcare, the environment and energy, and high-value-added infrastructure) and engage in proactive strategic investments with the aim of achieving numerical targets by the timeframe defined under Denka Value-Up.

Healthcare	In addition to illness prevention and early diagnosis, we are expanding into cancer remedies and gene alteration analysis to help enhance people's quality of life.
The environment and energy	We employ such core technologies as cutting-edge inorganic materials in product development, with the aim of better satisfying the latest needs for solutions that help achieve zero emissions, support autonomous driving systems and assist in other technological pursuits aimed at creating a clean and safe future society.
High-value-added infrastructure	We strive to meet high-profile infrastructure development needs in countries around the world through the provision of cutting-edge materials and solutions.

▶ Strategic Investment Aimed at Expanding Our Operations Related to Thermally Conductive Materials for Automotive Applications

We will undertake capital investment totaling approximately ¥8 billion to boost our capacity to produce silicon nitride ceramic substrates and spherical alumina in order to swiftly accommodate growing demand resulting from a switchover to electric vehicles (EVs) in automotive industries worldwide, aiming to play a pivotal role in the market for thermally conductive materials.

▶ Expansion of the Vaccine Business

Despite our efforts to increase our influenza vaccine production capacity and maintain a stable supply as one of Japan's major vaccine manufacturers, in recent years we have not been able to provide a sufficient volume of products to meet customer expectations. We will therefore invest approximately ¥16 billion in the construction of a new liquid vaccine production facility to expand our supply capacity.

▶ Merger with Denka Seiken

With the merger of Denka Company Limited and Denka Seiken scheduled for April 1, 2020, we will rally the entire strength of the Denka Group to accelerate the development and expansion of its healthcare-related operations.

▶ Acceleration of Infectious Disease Diagnostic Testing System Development via Investment in Taiwan-Based PlexBio

Currently, we are striving to accelerate the co-development of an infectious disease diagnostic testing system in tandem with PlexBio Co., Ltd., a strategic partner headquartered in Taiwan. This system is expected to shorten the time needed to detect pathogenic microorganisms and identify drug-resistant bacteria genes. Through this partnership, we will develop epoch-making products that contribute to the early amelioration of and the prevention of death attributable to infectious diseases, such as sepsis, while advancing drug resistant bacteria countermeasures that facilitate the prudent use of antibiotics.

*Denka's definition of a specialty business: A business that meets or has the potential to meet the following conditions in the near future: 1) being consistent with the Company's commitment to addressing ESG issues; 2) boasting distinctive strengths and product value; 3) possessing resilience to changes in external factors; and 4) commanding an industry-leading market share

Specialize Our Key Operations

We will work to increase the "specialty grade" ratio in our product lineup to secure resilience to changes in external conditions as we shift our focus to the solution business, with the aim of specializing our commodity businesses.

▶ A Full-Scale Entry into the Biostimulant Market

We have been marketing AZUMIN fertilizer for more than a half century. This humic acid fertilizer, which falls into the definition of a biostimulant, boasts the ability to improve soil, invigorate the roots of plants and enhance overall crop growth and has proven effective even when used on dry or low-temperature farmland. Taking full advantage of our technological expertise in this field, we will develop biostimulants with even superior functionalities, thereby contributing to the expansion of crop yields.

▶ Optimization of Our Calcium Carbide Chain

With the establishment of a dedicated working group for restructuring our calcium carbide chain, discussion is now under way to identify ideals for the overall calcium carbide chain supporting our commodity businesses. We will also accept an even broader range of waste in the course of cement production and thereby step up resource recycling. Simultaneously, we will enhance profitability via the logistics alliance with Sumitomo Osaka Cement Co., Ltd.

▶ Optimization of Our Styrene Chain

We are ever more focused on pushing ahead with cost reductions in the styrene monomer business, an integral component of our styrene chain. Stepping up collaboration with Maruzen Petrochemical Co., Ltd. in terms of our use of utilities, we will strive to improve our cost competitiveness.

▶ Optimization of the Group's Trading Functions (merger of Akros Trading Co., Ltd. and YK Inoas Co., Ltd.)

The trading companies Akros Trading and YK Inoas, both of which are consolidated subsidiaries of Denka, handle various chemicals, particularly products manufactured by other Denka Group companies. In addition to ensuring the effective use of the two companies' management resources and improved management efficiency, this merger is expected to maximize synergies in the marketing of electronic materials, special cement additives and other offerings. In this way, we will boost the Group's sales and service capabilities.

Redefine the Positioning of Commodity Businesses

As part of our initiatives to facilitate the transformation of our business portfolio, we will redefine the positioning of commodity businesses that are intrinsically unsuitable for specialization.

▶ Withdrawal from FIRELEN and β Silicon Nitride

FIRELEN was released in 1967 and has been serving mainly as a filler material for the tapholes of blast furnaces, while β silicon nitride, since its release in 1983, has been contributing to the field of fire-resistant materials. However, we decided to withdraw from the production of these offerings in the course of the business portfolio shift, giving due consideration to changes in the market environment and the aging of our production facilities.

The Omuta Plant, which has been manufacturing the aforementioned offerings, is now transitioning to a production base for specialty products, especially such electronic materials as electro-conductive substrates and fillers for use in high-temperature conditions. Upon this withdrawal, relevant staff will be transferred to growth fields. The plant will thereby accelerate the specialization of its operations.

Introduction of Innovative Processes

Growth Strategy

Examples of Initiatives



Production Process Reforms

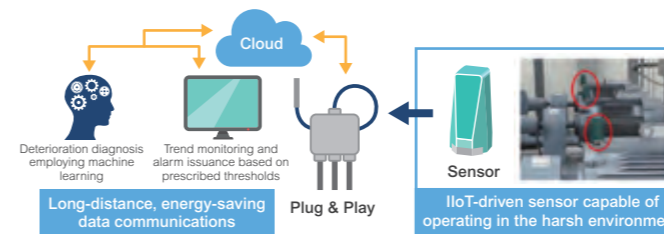
As part of our threefold growth vision under the Denka Value-Up management plan, we aim to significantly enhance productivity through innovative processes, to this end promoting production process reforms with the goal of doubling labor productivity compared with the fiscal 2017 level.

- Policies**
- Restructure our production facilities into ICT-based next-generation smart factories
 - Build a robust, overarching information platform capable of managing all data on a real-time basis
 - Realize manufacturing operations with greater productivity and superior stability

▶ Restructure our production facilities into ICT-based next-generation smart factories

Anticipate malfunctions and smoothly maintain rotating equipment by employing vibration sensors with wireless communication systems

Although the prediction of rotating equipment malfunction is largely dependent on vibration measurements, advances in wireless data communication technologies are making it easier to carry out such measurements and are expected to reduce burdens on workers while improving operational efficiency. With this in mind, we are verifying the results of trial introduction of such technologies while rolling them out at a broader range of manufacturing sites.



▶ Realize manufacturing operations with greater productivity and superior stability

Stabilize operations and improve manufacturing safety and facility security via big data analysis

The Chiba Plant has been facing some issues associated with its styrene monomer production facilities' reliability in terms of continuous operations. Addressing these issues, the plant began using a system for detecting signs of operational abnormalities and is developing a prediction model that takes into account seasonal differences in operational conditions, such as external temperature, to enhance detection accuracy.



R&D Process Reforms

With the aim of creating new businesses and products for future generations, we are promoting open innovation by participating in industry-government-academia partnership at home and abroad and by facilitating close in-house collaboration. Our R&D also focuses on incorporating ESG perspectives while applying materials informatics as part of initiatives to utilize data science in material development. Furthermore, we helped a number of our researchers obtain diplomas at domestic and overseas educational institutions, promoting the development of capable human resources.

- Policies**
- Clearly identify R&D visions for specialization
 - Develop and utilize R&D assistance systems
 - Strategically nurture and allocate researchers while assisting in their career development

▶ Clearly identify R&D visions for specialization

Having designed the "value-shift diagram,"* we are engaged in across-the-board efforts to promote specialization via the use of this diagram designed for each product and technology.

Specifically, we are striving to clarify our R&D vision for specialization in line with a policy of (a) creating seeds via open innovation based on close in-house collaboration; (b) disseminating the utilization of the value-shift diagram; and (c) facilitating collaboration between R&D and business divisions to accurately assess customer needs and develop a framework for matching needs and seeds.

* With the vertical axis and horizontal axis representing social issues/needs and advances in our technological development, respectively, the value-shift diagram indicates the characteristics of each product and solution as well as how they will contribute to future value creation.

▶ Develop and utilize R&D assistance systems

We are engaged in system development projects to better utilize our "data lake" aimed at collectively managing information on all research activities across the board. We are also introducing a "text-mining" technology to identify useful information from the large volume of text data in our possession. Furthermore, efforts are under way to digitize and collectively manage all research records by encouraging the use of "electronic laboratory notes" by frontline researchers.

▶ Strategically nurture and allocate researchers while assisting in their career development

To achieve the Denka Value-Up management plan, we are systematically nurturing researchers while strategically determining their allocation in a way that gives due consideration to individual aptitude. To this end, each business unit is mandated to clarify desired traits for human resources. We are also reforming human resource systems by, for example, stepping up career development assistance that helps researchers to obtain diplomas. As part of recruitment activities, we are engaged in PR activities targeting various academic circles to facilitate the understanding of our operations.



Operational Process Reforms

Work style reforms / Diversity promotion

Having installed a wireless LAN network at the Head Office in conjunction with a massive facility renovation in July 2018, efforts are currently under way to install similar systems at domestic branches, sales offices and plants as well as at our offices in Singapore. At the same time, we are developing a location-free working environment by introducing mobile devices (PCs and smartphones) as well as various external services, including groupware.

- Policies**
- Establish an organization charged with promoting digitization to support the introduction of innovative processes (the Digital Promotion Dept.)
 - Introduce next-generation groupware
 - Deploy an electronic approval system

▶ Establish an organization charged with promoting digitization to support the introduction of innovative processes (the Digital Promotion Dept.)

In April 2019, we established the Digital Promotion Department, a business unit charged with strategically developing and managing the Group's overall information system. This department is also expected to facilitate the utilization of data, the introduction of sophisticated systems and strengthen cybersecurity measures. Under the initiative of this department, we will promote digitization to establish a foundation supporting the introduction of innovative processes.

▶ Introduce next-generation groupware

We are striving to enhance operational efficiency via the introduction of Office 365, a next-generation groupware expected to achieve the following.

1. Help employees unify their ID/password used in groupware and e-mail software through integration of these two systems
2. Improve operational efficiency via the sharing of schedulers for individuals and teams
3. Facilitate real-time information sharing with the introduction of a group chat app
4. Support the full-scale launch of Denka's intranet web portal and the development of each business base's portal site

▶ Deploy an electronic approval system

In February 2018, we introduced an electronic approval system that takes over our previous approval procedure, which involved circulating a paper application form and requiring seals to be placed on it by managers. This system began with the submission of a handling application requesting approval for overseas business trips, budgets for purchasing fixtures and equipment and the initiation or continuation of transactions. Plans call for expanding the scope of procedures handled by the system to include contract screening, management and other procedures involving the Legal Department. In this way, we will go paperless and speed up approval procedures.



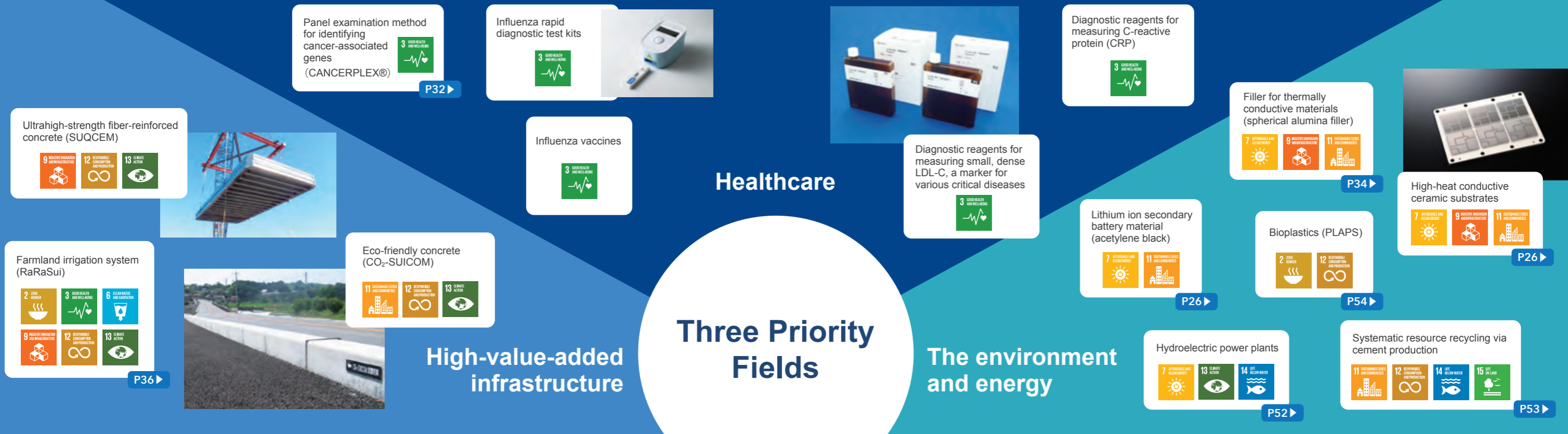
Our Contribution to United Nations SDGs



We believe the Denka Mission, "Taking on the challenge of expanding the possibilities of chemistry to create new value and contribute to sound social development," to be in accord with the spirit of the United Nations SDGs, which aim to facilitate the sustainable development of society.

With the SDGs as the compass guiding our efforts to create unique product technologies and solutions, we will support the ongoing advancement of society around the globe.

Progress in Incorporating the SDGs into Our Management Approach



Product and Technological Development Aimed at Addressing Global Warming

We manufacture chemical products through the operation of electrical furnaces and chemical plants, which require the stable supply of reasonably-priced energy. In the course of a history spanning more than 100 years, Denka has grappled with and overcome a number of hardships that might have otherwise put an end to its operations.

Drawing on lessons learned from this experience, Denka is expanding capacities of its facilities that generate renewable energy while endeavoring to reduce energy consumptions at each manufacturing base. Moreover, Denka is striving to counter global warming via the provision of products and services.

Today, researchers are scrutinizing the proactive use of CO₂ to facilitate organic compound synthesis, accelerate photonic synthesis in microalgae and support the growth of agricultural crops. Based on the results of this research, we hope to establish unique carbon capture & utilization (CCU) technologies that help improve our products' CO₂ utilization and thus cut the amount released into the atmosphere.

Thermally conductive materials

Materials used as thermal solutions in a variety of devices, such as vehicle-mounted electrical components, digital home appliances, power modules, switched-mode power supplies, LED lights, flat panel displays and solar cells, helping reduce their energy consumption and lengthen product life

Food packaging materials

Striving to reduce the thickness and overall bulk of food containers and thereby helping cut the volume of plastics used while promoting the use of bioplastics

Phosphor

Contributing to the popularization of LED and a switchover to energy-saving lighting equipment

CO₂-SUICOM, an Eco-Friendly Concrete That Completely Offsets CO₂ Emissions

Denka has developed CO₂-SUICOM, a pioneering product in the CCU technologies field, which manufacturers worldwide are now seeking to develop. This concrete product was co-developed by Denka, the Chugoku Electric Power Co., Inc., Kajima Corporation and LANDES Co., Ltd., utilizing a carbonization agent dubbed "LEAF." Developed by Denka, this cement additive increases concrete's absorption of CO₂ in the course of curing and hardening. Thanks to this unique property, CO₂-SUICOM production yields a net CO₂ emissions volume of zero or less. Also, because CO₂-SUICOM completes hardening via deliberate carbonization, the finished product is virtually pH neutral and has little negative effects on plants or other organisms.

With a solid reputation as an innovative CCU solution, CO₂-SUICOM won Denka the 2014 Environment Minister's Award for Global Warming Prevention Activity and the Chairperson's Award under the 13th Eco-Products Awards program sponsored by Eco-Products Awards Steering Committee.

Systematic Resource Recycling via Cement Production

Denka's Omi Plant accepts waste emitted by communities across Japan as materials and fuels for cement production. Specifically, we accept sludge from water supply and sewage treatment systems, debris from disaster-hit areas and waste soil from construction sites as well as waste oil, plastics and tires recovered via automobile disassembly in addition to automobile shredder residue. Furthermore, we accept coal ash, plaster, slag and other byproducts from thermal power stations and steelworks. Most of these byproducts are otherwise destined to be disposed of via landfill. The resources we accept vary largely in shape and composition, and include a number of items that are unstable. Accordingly, we pay close attention to the safe handling of these materials and maintain the quality of the cement while leveraging sophisticated facility management techniques.

In these ways, our cement business is playing a critical role in collective efforts to protect the environment of and promote resource recycling in local communities. Thus, this business exemplifies an excellent "creating shared value" (CSV) initiative as it helps improve business profitability while at the same time making social contributions.

Company-Run Hydroelectric Power Plants

Since its founding in 1915, Denka has been engaged in the construction and operation of hydroelectric power plants. Currently, Denka owns 10 power plants and is a co-owner of five more, securing a robust network of power plants spanning Niigata and Nagano prefectures. All of these facilities are located in steep mountain ranges where they employ a natural inflow type hydroelectric power generation system, a water intake method that takes full advantage of height differences attributable to the surrounding landscape to efficiently drive turbine runners. These facilities are thus designed to minimize environmental footprints attributable to their operations.

Among these, our Kotakigawa Power Plant boasts a history spanning nearly 100 years. While cherishing this historical facility, which has been in operation since 1921, we are also promoting facility upgrades aimed at improving power generation efficiency and the construction of new hydroelectric power plants. The construction of new hydroelectric power plants entails a number of major challenges due to the lengthy period of time necessary for construction and considerable costs. However, we are determined to promote the use of renewable energy by taking advantage of the longstanding accumulation of our know-how in this field. To this end, we will facilitate the understanding of and win the support of local communities while utilizing government subsidy programs. In this way, we contribute to sustainable social development and thereby fulfill our social responsibilities.

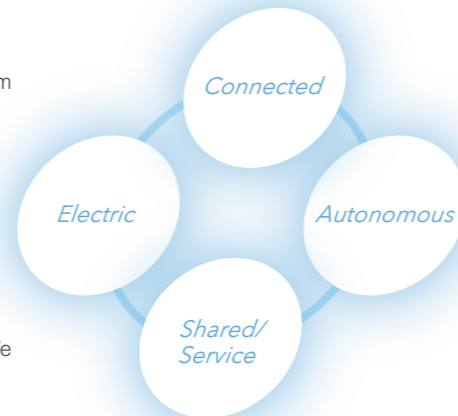
Denka's Growth Strategies in the Automotive Field



Latest Trends in the Automotive Market

Today, the automotive industry is undergoing a "once-in-a-century revolutionary change." These changes are often referred to by the acronym CASE, standing for Connected, Autonomous, Shared & Services and Electric. While trends on these four fronts promise improved user convenience, they are expected to pose major challenges to the industry, prompting automotive and related businesses to undertake thoroughgoing restructuring. In other words, right now industry conditions are conducive to the creation of new businesses that may eventually achieve significant growth.

Under the Denka Value-Up management plan, we are placing strong focus on automotive-related operations as part of the environment and energy, which we have positioned as a priority field. We will provide essential materials and solutions supporting the aforementioned trends, thereby expanding these operations.



Social Issues

Among the issues confronting the automotive industry, the reduction of its environmental footprint and the prevention of traffic accidents are paramount. In the face of growing public concerns about the environment, regulatory standards enforced by EU members and other major countries to limit CO₂ emissions from vehicles are becoming ever more stringent due to the looming threats of air pollution, global warming and other detrimental phenomena affecting countries worldwide. If automakers are to be able to meet these standards, it is essential that the use of electric vehicles (EVs) gains popularity and vehicle weights are reduced.

In Japan, the growing number of car accidents involving elderly drivers is a public concern. On a global basis, approximately 1.3 million people die in car accidents every year. Against this backdrop, automakers are called upon to realize a safe, reliable and fully autonomous driving system so that one day the occurrence of such accidents can be reduced to zero. This technology is also expected to help resolve such issues as how to improve mobility for people with disabilities and how to compensate for the shortage in human drivers.

Initiatives to Help Resolve Social Issues



Popularization of EVs (the environment)

1 Power Control Units

- Inverter materials: High-heat conductive ceramic substrates
- Nitride aluminum plates
- Silicon nitride plates

2 Lithium ion secondary batteries (LiBs)

- Acetylene black
- Thermally conductive materials



Reduction of vehicle weight (the environment)

1 Switchover from conventional lights and blinkers to LED fixtures

- Phosphor: ALONBRIGHT
- Metal circuit substrates: HITPLATE

2 Weight reduction via the development of thin bundling tapes for wire harnesses

- Bundling tapes for wire harnesses: VINI-TAPE

3 Development of lightweight materials (resins) with smaller environmental footprints

- Fluorine-based films: DENKA DX Film
- A film that gives a smooth tactile impression akin to a napped fabric: Noble Tact (now under development)



Autonomous driving systems (safety)

1 Millimeter-wave radars



2 Vehicle to vehicle communication

Vehicle to roadside infrastructure communication

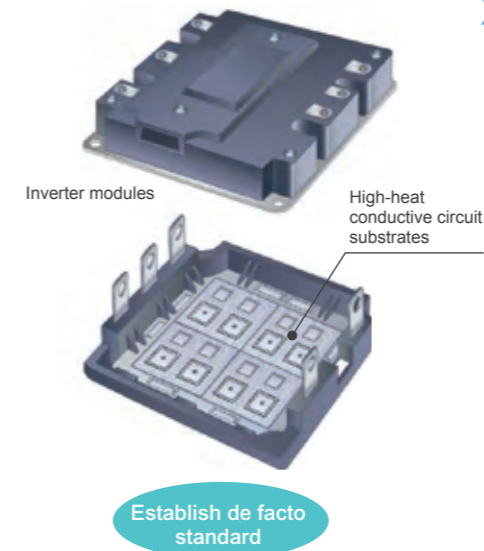


- Materials for high-frequency devices: Fillers that reduce transmission loss
- Materials for electromagnetic wave absorption and insulation

Denka's Strengths in the Automotive Field

High-heat conductive ceramic substrates

Popularization of EVs (the environment)



Denka's ceramics-based electronic circuit substrates are made using nitride ceramic powder manufactured in a high-temperature environment at 2,000°C and boast such features as high-heat conductivity, electric insulation, smaller thermal expansion and superior toughness. These substrates are used in automobile, railcar and industrial instrument power modules that are increasingly expected to achieve higher output and to be compact in size.

- Strengths**
- 1 Denka is the only manufacturer handling both nitride aluminum and silicon nitride
→ Capable of supplying module materials whether emphasis is placed on thermal conductivity or reliability
 - 2 Denka is the only manufacturer with an integrated production system encompassing products from raw material powder to circuit substrates
→ Capable of flexibly accommodating customer requests for higher product performance while boasting cost competitiveness

Future strategy

- Transition from labor-intensive production process to automated, smart factories employing AI and IoT

Sales targets

FY2022 target	¥13.0 billion	▶	FY2025 target	¥19.0 billion
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Acetylene black

Popularization of EVs (the environment)



Carbon black is one of our specialty products. It is manufactured by decomposing acetylene via high-temperature combustion and is known for ultra-high purity. Thanks to its unique, chain-like structure consisting of a string of colloidal micro particles of carbon, this product boasts electro and thermal conductivity as well as liquid absorbency, among other features. Since the 1942 launch of its production, Denka has supplied acetylene black for use as a conductive aid for batteries, a material for the semiconductor layers of ultrahigh-voltage cables and other applications requiring high reliability.

- Strengths**
- 1 Ultra-high purity of acetylene-based ingredients (metal and other impurity content is less than one tenth of competitor products)
→ Capable of supporting the creation of high-performance and highly reliable batteries for automobiles
 - 2 The world's largest acetylene black production capacity, fully capable of accommodating fast-growing demand

Future strategy

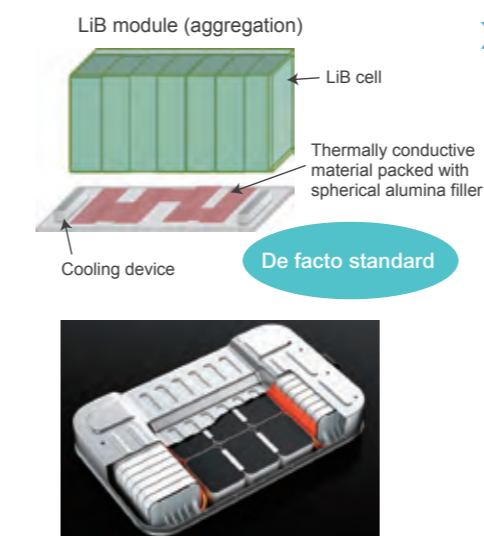
- Step up penetration into the Chinese market and seize business opportunities arising from burgeoning market growth

Sales targets

FY2022 target	¥5.5 billion	▶	FY2025 target	¥7.5 billion
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Spherical alumina filler

Popularization of EVs (the environment)



This product is used as an additive that gives resins and elastomers superior heat conductivity. The application of Denka's unique high-temperature fusing technologies gives the filler superior purity, liquidity and sphericity and it is used as a key thermal solution material capable of supporting the creation of miniaturized electronic devices with greater capacity.

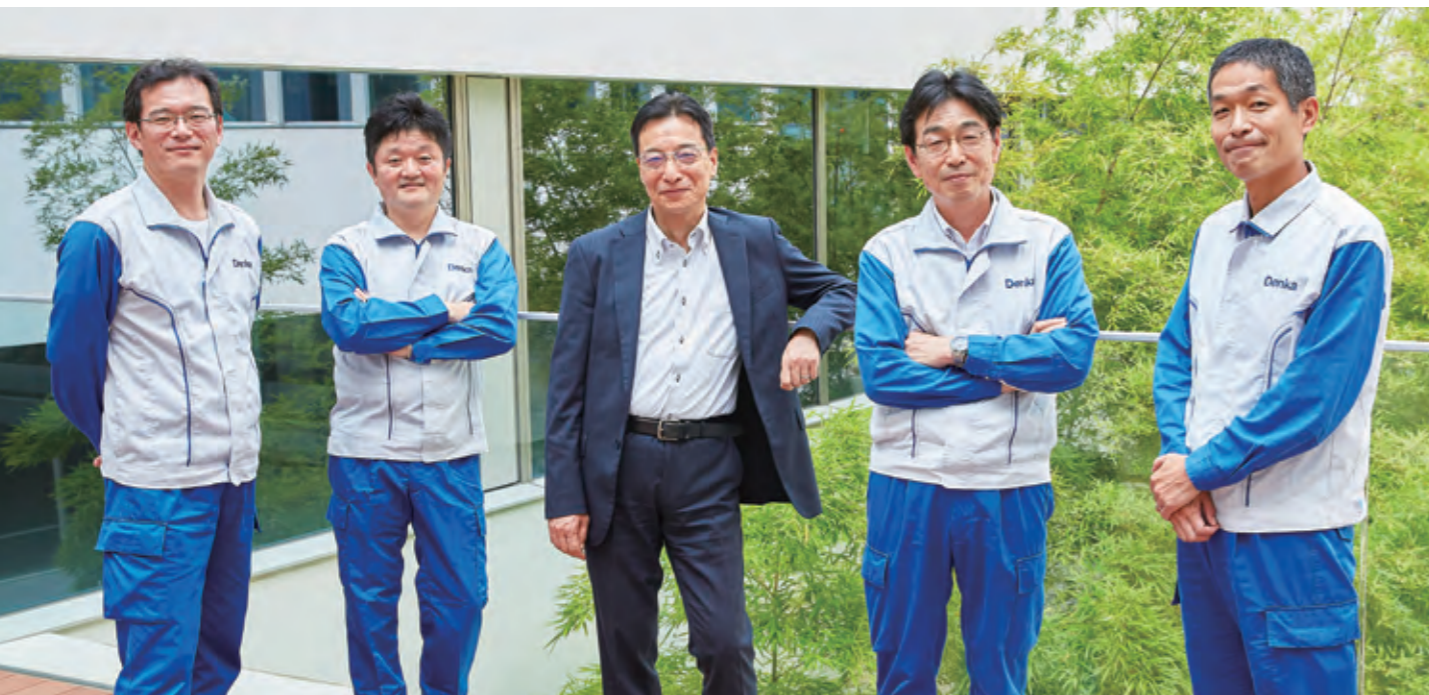
- Strengths**
- 1 A product lineup encompassing a range of particle diameters and sophisticated particle design techniques supporting this lineup
→ Capable of helping various thermal solution materials significantly enhance their thermal conductivity via the realization of higher filling density
 - 2 The world's largest spherical alumina filler production capacity supported by sophisticated manufacturing process with superior productivity

Future strategy

- Boost our production capacity in a timely manner in response to rapidly growing demand

Sales targets

FY2022 target	¥7.0 billion	▶	FY2025 target	¥8.5 billion
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An Employee Round-Table Talk

Date: June 21, 2019; location: The Denka Innovation Center (Machida City, Tokyo)
Note: Titles of participants are as of the date of the round-table talk.

Theme

R&D Aimed at Supporting Technological Innovation in the Automotive Field

The Denka Group boasts a broad range of chemical technologies supporting technological innovation in the automotive field. In fact, the creation of innovative chemical materials is essential to realizing breakthroughs in automotive technologies, such as the installation of advanced car electronics and the creation of autonomous driving systems. We invited managers responsible for R&D in the areas of ceramics, acetylene black and other cutting-edge materials to participate in this round-table talk and share their enthusiasm for creating new value for the future.

01 Denka's Automotive Products and Technologies

Murata (facilitator): The automotive industry is undergoing a once-in-a-century revolutionary change. Today, we have invited managers charged with the development of automobile-related products to join this round-table talk and share their views on the contributions Denka technologies will make and how the Company aims to achieve sustainable growth in the face of such a pivotal change. First, could you begin by explaining the roles your products are fulfilling in society?

Taniguchi: The Omuta Plant's Ceramic Research Department is focused on the R&D of ceramics-based electronic circuit substrates and spherical alumina filler. The former is an essential component of electronic circuits installed in inverters for motor drivers and DC-DC

converters for powering electronic equipment. The latter is a functional ceramic powder being used as a resin encapsulant for semiconductors and a filler for thermally conductive materials.

Murata: Denka commands a considerable 60% share of the global ceramics-based electronic circuit substrate market while commanding a 70% share of the global spherical alumina filler market. Furthermore, demand for these offerings is ever growing. Could you elaborate on the fundamental technologies used to create them?

Taniguchi: Denka boasts an accumulation of high-temperature control technologies backed by a long track record in calcium carbide production that dates back to its founding. Building on these technologies, the Omuta



Hiroshi Murata (facilitator)
General Manager, AMS Dept.

■ Spearheading the Denka Group's efforts to expand automobile-related operations to meet needs of future generations



Hideki Hirotsuru
General Manager, Specialty Ceramics Research Dept.,
Advanced Technologies Research Institute,
Denka Innovation Center

■ Taking on R&D aimed at realizing innovation via the creation of unconventional materials and systems



Takuya Okada
General Manager, Advanced Materials Research Dept.,
Advanced Technologies Research Institute,
Denka Innovation Center

■ Taking on R&D of new materials for next-generation vehicles

Plant has led the advance of ceramic sintering technologies while developing composite technologies that combine ceramics with different kinds of materials, such as metal. These endeavors have resulted in the creation of a great number of products, among them DENKA SN Plate, a silicon nitride-based electronic circuit substrate, used in automobile inverters, an area in which expectations are for ever higher output capacity and ever more compact units. Meanwhile, our spherical alumina filler boasts a meticulously controlled particle shape and diameter thanks to the use of the flame fusing method while containing fewer impurities, such as metal.

Hirotsuru: Although the R&D departments at Denka's plants are charged with upgrading the functions, enhancing the cost competitiveness and improving other features of existing products, the Innovation Center itself is taking on the creation of unconventional materials and systems. In fact, the facility is focused solely on realizing innovation, in contrast to the aforementioned R&D departments charged with enhancement. Specifically, our duties include participation in a national project centering on a next-generation heat-dissipation mechanism and the co-development of novel materials in tandem with customers, including automobile parts makers with significant potential.

Murata: I see. Whether we aim to realize innovation or enhancement, an accurate assessment of the latest needs is key to directing our R&D activities. In this regard, the Automotive Materials & Solutions (AMS) Department is playing the important role of directly engaging with customers and acquiring valuable insights into their needs.

Just like ceramics handled by Mr. Taniguchi and Mr. Hirotsuru, Denka's acetylene black boasts a significant share of the global market and is becoming increasingly sought-after as a conductivity enhancer for automotive LiBs. To meet growing demand, production is currently under way at full capacity. Mr. Uchida, could you explain the features of this product?

Uchida: The manufacture of a battery conductivity enhancer requires the stringent management of impurities. This is essential to achieving higher quality in terms of product safety and product life. Acetylene black's distinctive strengths lie in its extremely high electro conductivity and ultra-high purity thanks to a manufacturing method employing the high-temperature heat decomposition of acetylene. In addition to taking advantage of the material's strengths, we are focused on providing customers with technical services, for example, jointly planning an optimal particle shape tailored in line with the customer's intention.

02 Product Development Supporting the Automotive Industry's Adaptation to Radical Changes

Murata: The current trends affecting the automotive industry worldwide are often referred to using the acronym CASE, or Connected, Autonomous, Shared & Services and Electric, four areas of emerging automotive technologies and functions that are attracting growing public interest.

Denka boasts a wealth of technologies that will support the intensive use of car electronics. In addition, the Advanced Materials Research Department is engaged in research into connected cars and autonomous driving systems. Furthermore, the AMS department is studying the feasibility of Mobility as a Service (MaaS), an innovative

transportation service exemplifying the "Shared & Services" aspect of these trends.

Now, I would like to ask you to tell us about the status of initiatives you are undertaking to achieve technological innovation in terms of CASE as part of the pursuit of Denka Value-Up management plan targets.

Okada: The Advanced Materials Research Department is charged with developing next-generation materials that will help achieve innovation for automobiles. To support the popularization of EVs, we are engaged in research into next-generation batteries, such as all-solid-state lithium ion

Sales Targets for Automobile-Related Products

In fiscal 2018, sales of Denka's automobile-related products amounted to ¥37 billion. In line with the Denka Value-Up management plan, Denka is striving to raise sales of these products to ¥70 billion by the end of fiscal 2020, almost doubling its performance. By the end of fiscal 2025, Denka aims to achieve sales of ¥100 billion from these products.



Yoshitaka Taniguchi

General Manager, Ceramic Research Dept., Omuta Plant

■ Taking on R&D of ceramics-based electronic circuit substrates, spherical alumina, etc.



Yasutaka Uchida

General Manager, Battery& Conductive Material Development Dept., Chiba Plant

■ Taking on R&D associated with acetylene black

batteries. To help realize connected cars and autonomous driving systems, we are developing electromagnetic wave absorption and insulation materials supporting 5G communication infrastructure. Our projects also include the development of sound absorption materials employing a wealth of Denka know-how ranging from precision polymerization to resin processing technologies, with an eye to meeting the growing call for solutions of this kind due to the tightening of noise regulations.

Murata: Mr. Okada is taking on a broad range of research themes. For example, millimeter-wave radars represent one of the promising technologies supporting autonomous driving systems. These radars use a millimeter-wave bandwidth and are capable of detecting a road blockage at a distance of 100 meters to 200 meters via the measurement of wave echoes. The 5G communication technology likewise utilizes a millimeter-wave bandwidth and is expected to support the creation of connected cars with more sophisticated communication functions while helping realize "vehicle-to-vehicle" and "vehicle-to-roadside-infrastructure" communications, which are essential to autonomous driving systems. These technologies are attracting growing public interest. A broad range of research projects themed on these technologies are currently under way. Mr. Okada, what is the status of the development of materials that absorb or insulate radio waves other than the millimeter-wave bandwidths necessary for these radar and communication systems?

Okada: As 5G relies on high frequency radio waves, we have to take on the issue of transmission loss. We must also prevent malfunctions due to the unintended scattering of radio waves. To fulfill these requirements, we are striving to control the dielectric properties of the materials themselves. In this light, Denka's ceramics materials boast unique characteristics that may help us resolve a variety of issues we are now confronting. Sharpening our focus on realizing the possibilities of these materials, we are considering the development of new materials via, for example, a combination of ceramics and organic materials.

Taniguchi: The Omuta Plant's Ceramic Research Department is paying close attention to the recent trend in materials used in ceramics-based electronic circuits and other substrates as we have seen a growing shift toward the intensive use of car electronics in automobile markets around the world. In addition, requirements for vehicle-mounted power modules vary largely by customer. Therefore, these modules may one day undergo substantial changes in their structure and other aspects. Denka's technologies in this field encompass ceramics, metal and resin. Because of this, researchers are called to take full advantage of the Company's arsenal of technologies to realize comprehensive R&D strengths. Also, we are seeking a new functional filler that will fulfill customer requirements for even higher thermal conductivity and take over from spherical fused silica and spherical alumina and are, to this end developing such candidates as spherical magnesium oxide.

Hirotsuru: Once CASE technologies are commercialized, our products will be expected to adapt to new conditions, such as different temperatures and electronic frequencies. These changes may cause Denka to face even more stringent customer requirements—in terms of, for example, strain release and dielectric properties—that cannot be satisfied by merely enhancing the performance of existing materials. In short, CASE will significantly affect expected product performance and specifications. With this in mind, we must rally all Denka's strengths to deliver products that accurately achieve targeted performance goals, employing such technologies as those combining organic and inorganic materials, as needed.

Uchida: I expect that in step with the switchover to EVs, LiBs will become more sought after as the mainstream driving batteries for these vehicles and for HEVs and PHEVs. There will also be a growing need for batteries with higher capacities as automakers seek to create EVs capable of handling longer driving distances. We will have to develop a new conductivity enhancer that functions well even when less is used.

03 R&D Aimed at Contributing to Social Development

Hirotsuru: In recent years, material developers have been called to be ever faster in accommodating changes in customer requirements. We are sometimes asked to provide a new material or deliver products with totally different specifications. In order for Denka to become a leading company amid the revolutionary change affecting the industry, the Company must remain responsive to customer requests of this kind.

For example, if future technological advancements allow EVs to receive non-contact power feeding without stopping, their batteries will undergo a growing number of discharging and charging cycles in the course of product lifetime and be expected to accommodate even faster power charging. We also expect that the popularization of car sharing services will cause batteries to be used at significantly higher frequency. We must be attentive to new

developments in these factors and capable of quickly acting on latest intelligence.

Taniguchi: Researchers at Denka plants are generally tasked with R&D aimed at accommodating customer needs. However, we are also expected to go farther than that. It is important for us to constantly engage with customers and exchange the latest information so that we can anticipate their future needs and make timely proposals.

Hirotsuru: When we are approached by a customer with a clear development policy to fill a specific need, this means that we will have to compete against other suppliers before winning the project. However, when we work together with the customer to identify its latent needs, we are ahead of other suppliers and better positioned to take advantage of our unique technologies. That's exactly what we aim to achieve through our involvement in open innovation.

04 Researchers' Commitment to Helping Advance Social Development

Murata: With regard to fulfilling customer needs, Denka is increasing the allocation of R&D expenses to SDG-related projects that collectively address wide-ranging needs for solutions capable of advancing sustainable social development.

Lastly, I would like each one of you to share your commitment to helping resolve issues society is now confronting, including those specified by the SDGs.

Okada: LiBs are deemed a promising technology that is environmentally friendly. However, these LiBs might also be fed with electric power that has been generated via the combustion of a volume of oil or coal. I therefore believe that an optimal combination of various systems and technologies is essential in light of our mission to help advance genuinely sustainable social development. The incorporation of the SDGs into Denka's strategies helped us broaden our perspective when considering how to optimally reconcile various systems in society as a whole and accurately assess what is currently needed. This is definitely helpful to identify seeds for new products.

Uchida: Acetylene black, a conductivity enhancer for LiBs, is produced via the heat decomposition of acetylene. This acetylene is made from limestone and naphtha. As a researcher charged with technological development, I have identified the creation of a highly efficient and environment-friendly production method as my foremost mission.

Taniguchi: Denka offers a great variety of products, and numbers itself among only a handful of chemical companies in Japan with such an extensive product lineup. This attests to Denka's distinctive strengths in manufacturing. With a large number of technologies, including those

associated with ceramics and resins, at our command, we are called to strive to best utilize them in our R&D activities. This is how we will make social contributions in a way that only Denka is capable of doing. I would also like younger colleagues to be confident that researcher positions at Denka will give them abundant career opportunities to experience a variety of fields and allow them to freely pursue their ambitions and dreams.

Murata: Thank you for sharing your enthusiastic commitment as researchers. This round-table talk was also a success in terms of showcasing what Denka aims to achieve via manufacturing. Under the Denka Value-Up management plan, Denka is striving to raise the ratio of specialty businesses to 90% of its entire business portfolio by the end of fiscal 2022 based on the operating income ratio while aiming to double sales of automobile-related products in the same time frame. Denka's success in these pursuits hinges on researchers' development of new products. Lastly, I would encourage all colleagues to bring together Denka's unique specialty technologies in the automotive field and contribute to sustainable social development in countries around the world.



Life Innovation



Creating New Value via a Combination of Technologies Accumulated over Many Years

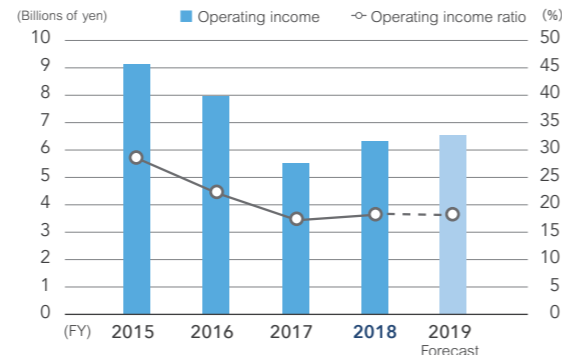
Hideki Takahashi
Executive Officer,
Life Innovation Division
Representative Director
and President,
Denka Seiken Co., Ltd.

Thanks to drastic advances in medical technologies, Japanese people are expected to enjoy an even longer life expectancy with an unprecedented number reaching 100 years. Because of this trend, life-long health maintenance has become a matter of growing public concern. With this in mind, the Life Innovation Division, which upholds a policy of "respecting the dignity of life" and "protecting people's health," is strengthening its key operations backed by decades of accumulated technologies. At the same time, the division is accelerating the development of new businesses. Through these pursuits, we aim to expand the scope of our operations to include cancer remedies and gene-based diagnostics, building on the core antigen and antibody reaction technologies that helped us secure a robust track record, particularly in the field of infectious disease countermeasures. Furthermore, we will create new value and contribute to society by taking advantage of a combination of the material and processing technologies Denka has developed over the course of its operations as a chemical manufacturer.

Characteristics of the Business Division

The division handles vaccines and diagnostic reagents produced by Denka Seiken, a Group subsidiary boasting a history spanning nearly 70 years, and a macromolecular sodium hyaluronate preparation manufactured employing Denka's biotechnologies. With these products serving as the core, the division is also engaged in the development of vaccines via the application of plant-based gene modification technologies possessed by Germany-based Icon Genetics GmbH while providing panel examination aimed at identifying cancer-associated genes. In short, the division is developing specialty businesses in fields of disease prevention, diagnosis and treatment.

Five-Year Divisional Performance Summary



Note: The Life Innovation Division was established in April 2017 and is in the process of forward-looking investment aimed at expanding its operations.

Business Strategies under Denka Value-Up

1. The Market Environment

- Growth in healthcare expenses due to the progressive aging of society and the sophistication of medical technologies
- Increasing risk of infectious disease pandemics, reflecting the formation of a global traffic network on the back of economic growth in developing countries
- Solutions for illness prevention and early diagnosis have become ever more important

2. Strategies

- Step up key operations (influenza vaccines, diagnostic reagents, macromolecular sodium hyaluronate preparation, etc.)
- Get new businesses smoothly on track (anticancer virus and panel examination aimed at identifying cancer-associated genes, etc.)
- Promote open innovation to create products and technologies for future generations (Denka Innovation Center, Icon, Denka Life Innovation Research, etc.)

Main Achievements in Fiscal 2018

- ▶ Denka Seiken decided to construct a new production facility for manufacturing influenza vaccines, with the aim of significantly boosting its influenza vaccine supply capacity (July 2018)
- ▶ Denka Seiken donated Ebola virus rapid diagnostic test kits to the Democratic Republic of Congo (May 2018)
- ▶ Denka Seiken released a dedicated densitometry analyzer (optical density meter) for in-vitro diagnostic testing using its influenza virus antigen detection test kits (October 2018)

Outlook for Fiscal 2019

We will place particular focus on commercializing a panel examination service for identifying cancer-associated genes. Building on the Denka Group's strong presence in the field of diagnostic test kits employing antigen and antibody reaction, we will expand into such businesses as gene-based diagnostic services. By doing so, we aim to provide an even broader range of solutions that transcend our traditional scope of operations focused on helping identify causes of disease.

Medium- to Long-Term Strategies

Denka Company Limited will merge with Denka Seiken, the latter of which has been charged with vaccines and diagnostic reagents—the Group's mainstay offerings supporting its life innovation business. This move is expected to facilitate the business portfolio shift aimed at specializing our operations while supporting the realization of speedier decision making and stronger corporate governance. In this way, we will accelerate the expansion and development of our healthcare-related operations. We will also strive to expand the scope of operations via the promotion of open innovation, which involves partners from academia as well as those from within and outside of the chemical industry, in addition to pushing ahead with our ongoing efforts to strengthen our key operations and launch new businesses.

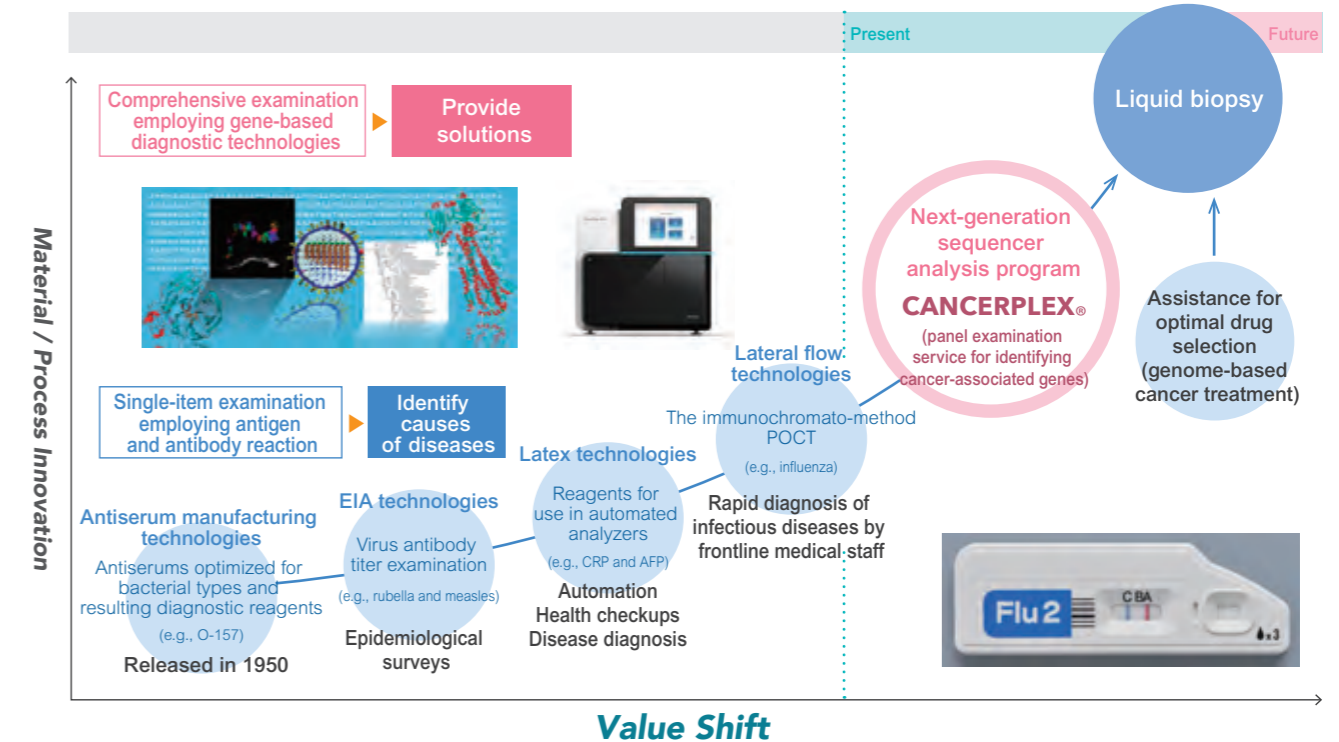


Macromolecular sodium hyaluronate preparation Vaccines Diagnostic reagents

Note: With the vertical axis and horizontal axis representing social issues/needs and advances in our technological development, respectively, the value-shift diagram indicates the characteristics of each product and solution as well as how they will contribute to future value creation.

Value-Shift Diagram

Business development in the clinical diagnosis field



Over time, the need for diagnostic solutions has burgeoned and diversified. The Denka Group has mainly provided diagnostic reagents and diagnostic test kits employing antigen and antibody reaction technologies to meet such needs. Looking ahead, we will strive to contribute to the enhancement of people's quality of life (QOL) by expanding into the field of gene-based diagnosis.

- EIA** Enzyme immunoassay
- CRP** C-reactive protein
- POCT** Point Of Care Testing: Instead of requiring separate medical examination rooms for performing diagnostic tests, POCT reagents enable medical staff to quickly perform on-site diagnoses at their medical practices without the need for massive equipment.
- Liquid biopsy** A biopsy technology that uses blood, urine or other bodily fluids rather than living tissue samples for examination purposes. This technology is less invasive than a conventional biopsy.

Development Example **CANCERPLEX®** (panel examination service for identifying cancer-associated genes and delivering cancer remedy information)



CANCERPLEX® is a comprehensive examination system for identifying cancer-associated genes via the combination of a next-generation sequencer*1 and bioinformatics technology.*2 This system is capable of detecting more than 400 cancer-associated genes by carrying out the accurate and detailed analysis of gene alteration attributable to a solid tumor. To contribute to the enhancement of people's QOL, we will assist each patient in the optimal selection of treatment methods through the commercialization of CANCERPLEX®.

*1 Examination equipment that reads genome sequences at an extremely high speed
*2 A type of informatics technology that analyzes such data as genome sequences identified by the sequencer to overcome the complexities of genomic information and acquire useful insights in the life science and medical fields

Electronics & Innovative Products

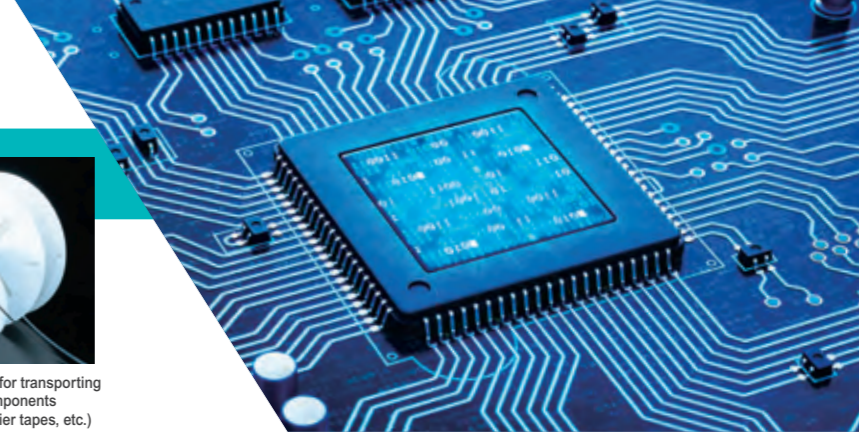
Taking Advantage of Denka's Unique Technologies to Support the Development of Innovative Products

Ikuo Ishida
Executive Officer,
Electronics &
Innovative Products

Employing a variety of essential technologies, the Electronics & Innovative Products Division offers a robust lineup ranging from functional fillers, thermal solution components and electronic packaging materials to structural adhesives. In short, the division is delivering products that are essential to the field of electronic materials. To contribute to society in the environment and energy field, we are pushing ahead with the specialization of our operations, to this end accommodating the latest needs arising from the popularization of EVs and other eco-friendly vehicles while delivering products that help promote the miniaturization of electronics devices and enhance their performance, safety and reliability. Furthermore, we are engaged in the development of new products by taking advantage of Denka's unique technologies.

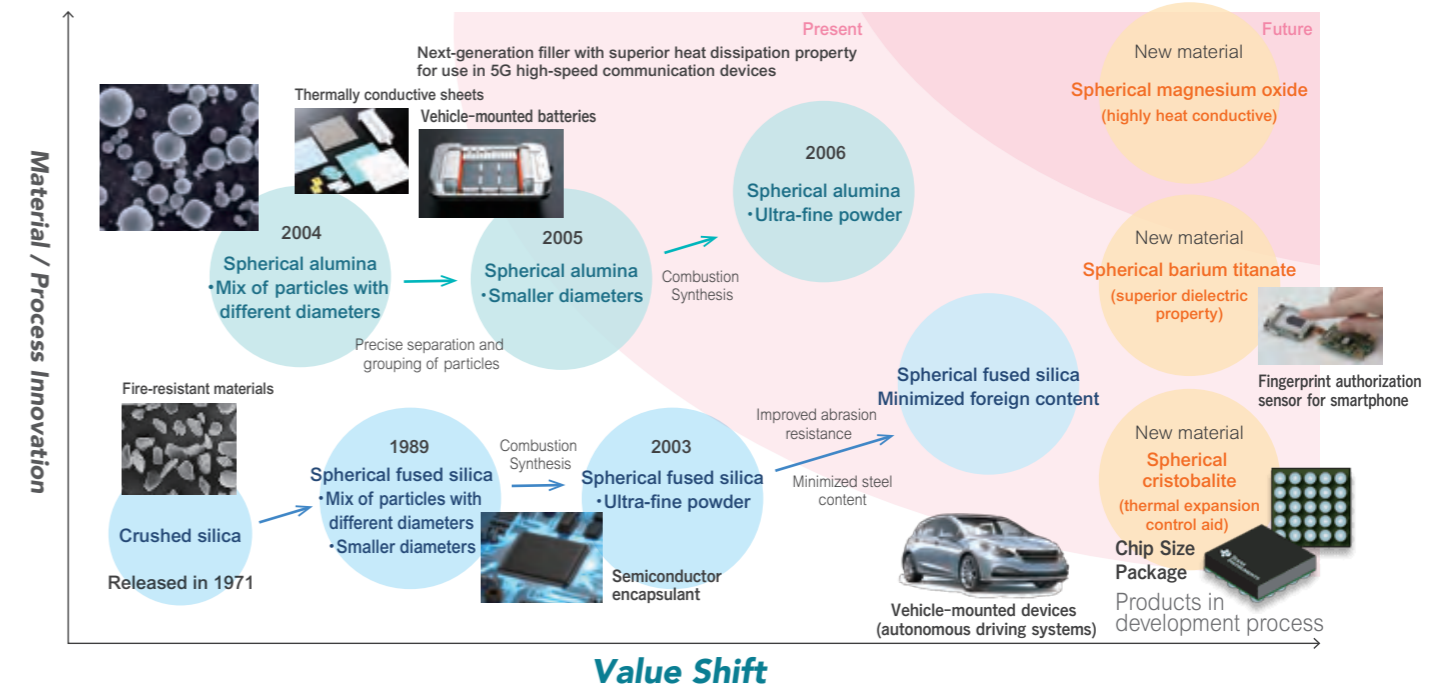


Phosphor DENKA THERMALLY CONDUCTIVE SHEET Packaging materials for transporting electronic components (Applications: Carrier tapes, etc.)



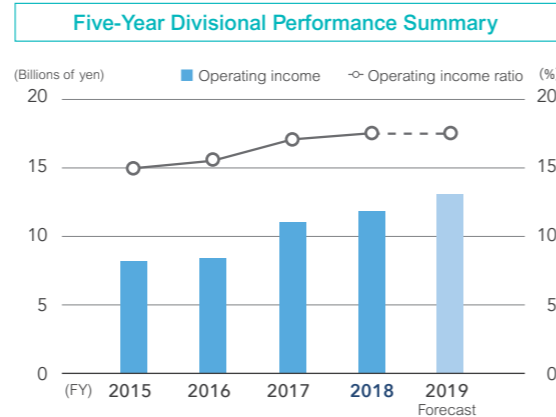
Value-Shift Diagram

Business development centered on spherical filler



Characteristics of the Business Division

Technologies	Ceramics sintering and calcining, particle manufacturing, nitride synthesis, precision processing and machining, material composite, sheet and film lamination, thermal conductive, heat and light curing, static electricity control, coating and painting and adhesive technologies as well as optical property control technologies, including those associated with controlling the refractive index
Products	Ceramics, inorganic fillers, resin sheets and films, electronic circuit substrates, adhesives, electron guns for electron microscopes, etc.
Business fields	Automobiles, electric and electronic devices, aircraft and spacecraft, rolling stock, marine vessels, the environment and energy, communication, power, etc.



Business Strategies under Denka Value-Up

1. The Market Environment

- Formation of new markets due to the popularization of EVs, HEVs and other eco-friendly vehicles
- Changes in people's lifestyles due to the commercialization of autonomous driving technologies and the widespread use of high-speed communications
- Possible emergence of a game-changing material that may pose a threat to Denka

2. Strategies

- Expand our operations targeting the vehicle-mounted device market
Supply materials for an even broader range of vehicle-mounted devices to secure a stable profit structure that is resilient against economic conditions
- Boost production capacity to meet needs of growth markets
Execute timely capital investment to enhance our ability to serve growth markets as we expect demand in semiconductor and communication fields to grow robustly
- Launch new businesses at the earliest possible date
Swiftly commercialize new specialty products

Main Achievements in Fiscal 2018

- ▶ Released a high-heat conductive metal circuit substrate designed as a substitute for ceramics-based substrates
- ▶ Released a highly reliable circuit substrate made using a metal material boasting an ultra-low stress-strain curve for use in headlamps
- ▶ Expanded sales of spherical alumina for use as a thermally conductive material for EV components
- ▶ Expanded sales of acetylene black for use in high-capacity LiBs for EVs and high-voltage power transmission cables for wind power stations in Europe

Outlook for Fiscal 2019

- ▶ Further expand sales in the vehicle-mounted device market
- ▶ Proactively consider and execute capital investment as we expect growth in demand for such products as silicon nitride-based ceramic substrates, spherical alumina and acetylene black

Due to the growing trend toward the miniaturized, lightweight and low-profile electronic devices, ceramics powder suppliers are being called to manufacture products with even smaller particle diameters. Denka offers a lineup of spherical alumina and silica that boast superior sphericity and a great size variety encompassing coarse powder to ultra-fine powder while also engaging in product design aimed at accurately satisfying customer needs. In these ways, we are contributing to the creation of electronic devices with even more superior functions.

- Spherical magnesium oxide** Twice as thermally conductive as alumina, this material is expected to achieve growing sales as a next-generation thermal dissipation filler for use in 5G high-speed communication devices.
- Spherical barium titanate** Employing its superior dielectric property, this material is expected to serve as a promising semiconductor encapsulant for use in fingerprint authorization sensors (components that read fingerprints via capacitance change detection) for smartphones.
- Spherical cristobalite** Created via the crystallization of spherical fused silica (amorphous), this material boasts a greater thermal expansion property compared with spherical fused silica and is expected to help low-profile semiconductors better withstand the stress-induced strain that occurs at the time of packaging.

Product Example Spherical alumina

Social issues	Source of value
Need for solutions capable of contributing to the popularization of hybrid vehicles and EVs and the enhancement of their driving energy efficiency as part of across-the-board efforts to promote global warming countermeasures	Denka's unique production technologies

In the face of the increasing popularization of EVs and the advancement of autonomous driving systems, there is a growing call for new technologies to control the heat emitted by LiBs and other car electronics components. Such technologies are seen as key to satisfying ever higher performance requirements for car electronics components with regard to various aspects, including capacity, energy efficiency, product life and safety, and are expected to facilitate the creation of more compact and even lighter devices.

Denka's spherical alumina is widely used in high-molecular thermal materials to improve their thermal conductivity. In particular, THERMALLY CONDUCTIVE SPACER, consisting of a mix of spherical alumina and silicon resin, is serving as an essential material supporting LiB cooling devices. Today, Denka's technological capabilities in this field, including those backed by unique production techniques associated with the maintenance of sphericity and the mix of particles with different diameters, are attracting growing attention and are expected to help promote the popularization of hybrid vehicles and EVs.

Infrastructure & Social Solutions

Delivering Even Better Solutions to Satisfy the Needs of the Times



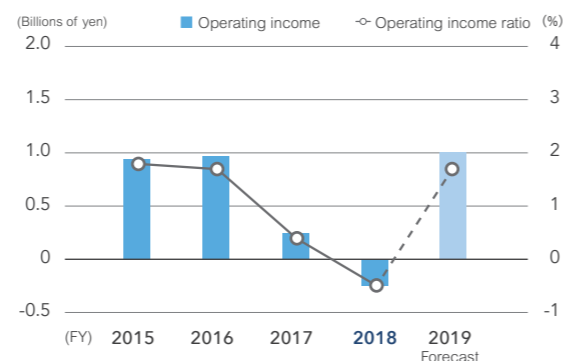
Toyoki Yokoyama
Executive Officer,
Infrastructure &
Social Solutions

The Infrastructure & Social Solutions Division is pursuing the specialization of its operations via structural reforms of the commodity businesses, which have supported Denka for 100 years, and the creation of high-value-added products and businesses that yield solutions that meet the needs of the times. The latter pursuit focuses on employing Denka's unique technologies to address environmental concerns, promote labor saving and deliver people-friendly products, with the aim of contributing to the realization of the United Nations SDGs and other universal goals related to ESG issues. In addition, we are developing a working environment that facilitates employee creativity via work style reforms. By doing so, we are becoming an organization that encourages all employees to take on challenging goals and help them work vibrantly and achieve success.

Characteristics of the Business Division

- Technologies** In-house power generation, mining, concrete hardening, expansion and contraction, material design, construction and repair technologies and soil improvement and fertilization technologies as well as high-temperature calcining technologies for inorganic materials and polymer processing technologies
- Products** Cement (made using recycled resources), special cement additives, functional fertilizers, alumina fiber, underground drainpipes and underground irrigation system-related products
- Business fields** Civil engineering, construction, agriculture, automobiles, iron-making, ceramics, etc.

Five-Year Divisional Performance Summary



Business Strategies under Denka Value-Up

1. The Market Environment

- Growing demand for solutions supporting infrastructure development, maintenance and upgrading (related to post-disaster reconstruction, publicly funded investment in new facilities and countermeasures to the aging of facilities)
- Burgeoning infrastructure development needs in China and Southeast Asia and growing demand for high-performance specialty products in Europe and the United States
- In farming, trends are toward labor saving and large-scale operations to shore up Japan's agricultural sector
- Growing need for ecological solutions

2. Strategies

- Develop products that support infrastructure maintenance and cultivate relevant markets
- Facilitate the utilization of recycled waste and thereby help develop a recycling-oriented society
- Step up overseas expansion by developing our local network for special cement additives in Asia
- Maximize profitability by optimizing our production system
- Promote the development of novel farming materials, thereby reinforcing our solution business targeting the agricultural sector
- Propose and implement solutions to help create energy-saving, environment-friendly steel and industrial furnaces

Main Achievements in Fiscal 2018

- ▶ Cement: Upgraded resource recycling facilities and expanded the scope of waste accepted
- ▶ Special cement additives: Promoted the use of the clear shot method employing shotcrete with low dust generation for tunnel construction
- ▶ Agri-products: Achieved growth in sales of humic acid liquid fertilizers
- ▶ Inorganic materials: Launched the full-scale provision of alumina fiber for automotive applications
- ▶ Environmental materials: Made a full-scale entry into the irrigation system market with the release of the RaRaSui underground irrigation system

Outlook for Fiscal 2019

- ▶ Cement: Reduce the external emission of in-house industrial waste to zero via the effective utilization of resource recycling facilities
- ▶ Special cement additives: Seize opportunities arising from growing demand associated with natural energy development projects (e.g., supply products for hydroelectric power station conduits) while making a full-scale entry into the overseas road repair business and the European market for tunnel construction solutions
- ▶ Agri-products: Make entries into biostimulant markets worldwide
- ▶ Inorganic materials: Augment production facilities to meet growing demand for automobile-related products while expanding sales of such products
- ▶ Environmental materials: Initiate expansion into overseas markets for agricultural irrigation systems



Value-Shift Diagram

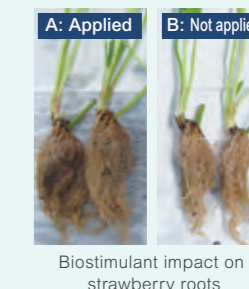
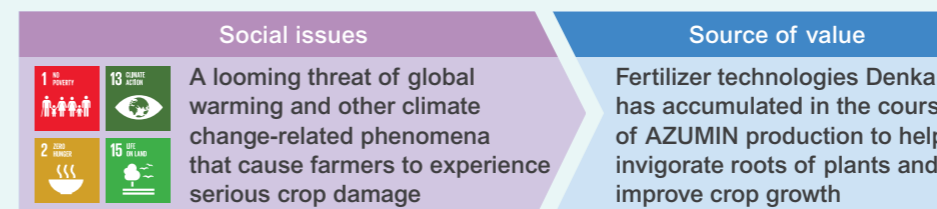
► Agricultural solutions



Value Shift

- Calcium cyanamide** This product is known to serve as a pesticide before decomposing into fertilizer in the soil.
- TOYODRAIN** The first resin-based helical corrugated pipe marketed in Japan.
- RaRaSui** Thanks to its ability to adjust underground water levels, this system enables farmers to switch the use of fields between irrigated paddy rice cultivation and upland crop cultivation. The system also helps farmers maintain an optimal watering regime tailored for the type of crop being cultivated.

Product Example Biostimulants



Denka's humic acid liquid fertilizer is a biostimulant that invigorates the growth of roots and facilitates nutrient absorption, thereby contributing to higher crop quality and larger crop yields. Furthermore, this fertilizer enhances plants' resilience against abiotic stress. Thanks to these features, the humic acid liquid fertilizer is expected to help resolve global food issues arising from food supply shortages due to population growth and serious crop damage attributable to the impact of global warming and other climate change-related phenomena.

Elastomers & Performance Plastics

Contributing to Technological Innovation and Social Development by Employing a Variety of Technologies and a Wealth of Know-How



Koki Tabuchi
Managing Executive Officer, Elastomers & Performance Plastics

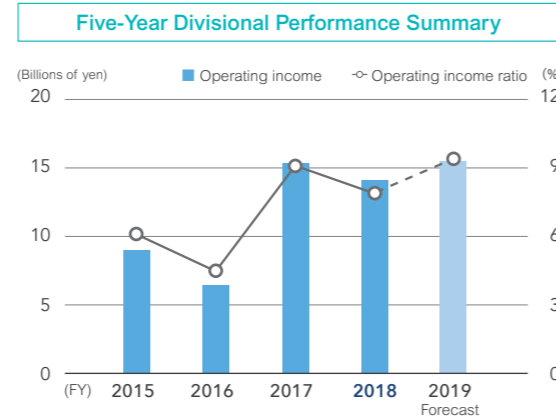
The Elastomers & Performance Plastic Division is in charge of three business categories: the elastomer business, which includes our flagship global market-leading chloroprene rubber (CR) operations; the performance plastics business, which boasts highly functional styrene-based products in an array of grades; and the styrene and chemicals business, which centers on styrene monomer and acetyl chemicals and is backed by Denka production facilities that boast the largest capacity in the Kanto area. Currently, the division's overseas sales ratio is holding stable at over 60%. In addition to our production bases in Japan, we operate overseas plants in the United States and Singapore to meet global market needs. Acutely aware of our mission to support Denka's largest, flagship business segment in terms of sales and profit, we will strive to maintain stable operations while promoting specialization, with the aim of achieving goals of the Denka Value-Up management plan.



Examples of CR-based automobile parts Examples of products made using DENKA TRANSPARENT POLYMER (styrene-based functional resin) A slope that has been sprayed with DENKA COAT soil erosion prevention agent

Characteristics of the Business Division

Technologies	Polymer structure design and control technologies, polymer composite technologies and material compounding technologies that aid in the creation of products for a variety of applications in line with customer intentions
Products	Synthetic rubber, styrene-based synthetic resins, styrene monomer, acetyl chemicals, etc.
Business fields	Automobile parts, transmission belts, adhesives, civil engineering (soil erosion prevention agents), home appliances, office equipment, food packaging materials, household goods for daily use, etc.



Business Strategies under Denka Value-Up

- The Market Environment**
 - Fear of supply chain disruptions due to the emergence of nationalism
 - Signs of changes in the automotive industry with regard to its needs for materials in the face of the radical shift to eco-friendly vehicles
 - Stably growing needs for solutions in the environment and healthcare fields
- Strategies**
 - Establish a business portfolio that is capable of securing stable profit and resilient against changes in trade conditions by stepping up technical services, developing highly functional grades that help Denka focus on non-price competition, and maintaining a sales mix consisting mainly of high-value-added products
 - Maximize synergies by taking full advantage of domestic and overseas production bases
 - Upgrade our quality management functions as part of efforts to enhance chemical content management and quality assurance systems

Main Achievements in Fiscal 2018

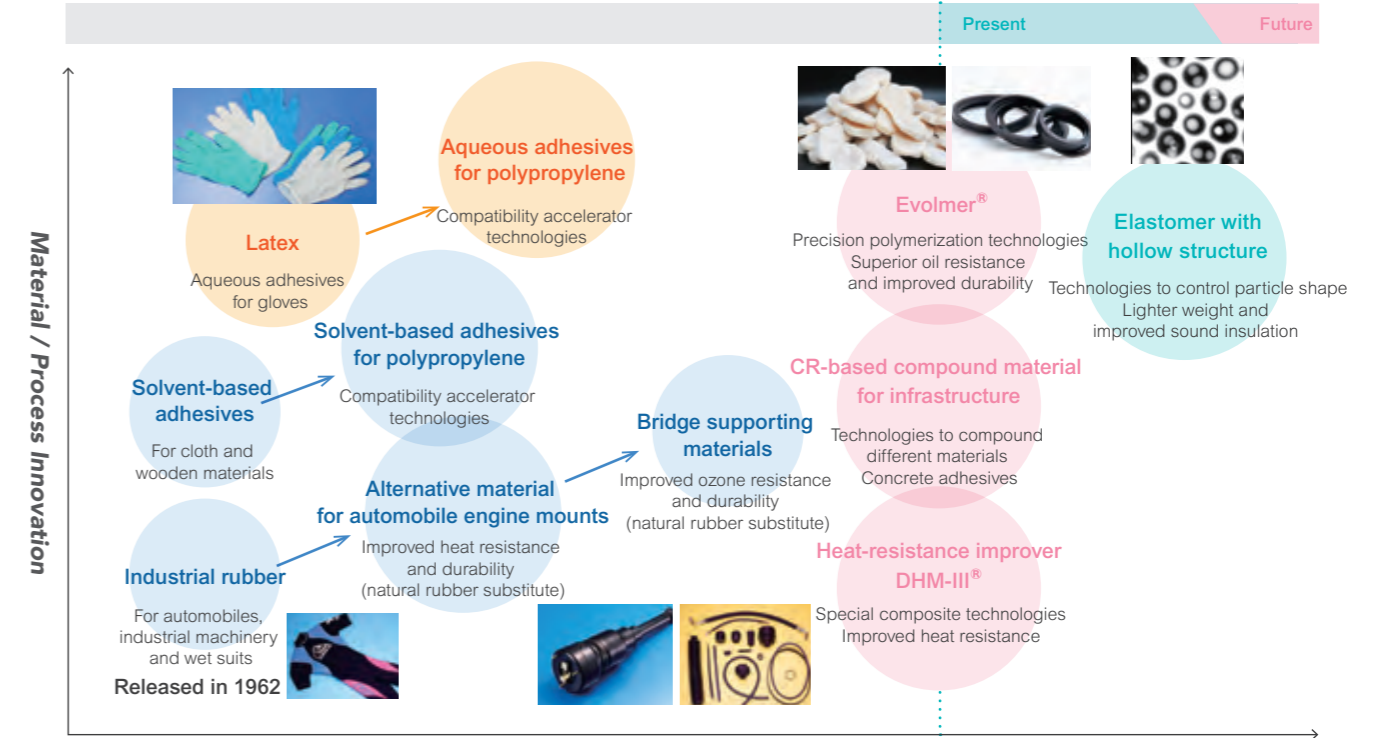
- ▶ Released Evolmer, the third functional elastomer introduced by Denka after DENKA Chloroprene and DENKA ER (Evolmer boasts excellent mechanical strength, oil resistance and abrasion resistance as well as well-balanced properties that set it apart from any previous elastomer)
- ▶ Reinforced DENKA ER production facilities (to supply materials for hoses for automobile turbo engines)
- ▶ Released AN-modified IP (IPX), which boasts the lower VOC content as well as superior heat and chemical resistance in addition to coating retention property
- ▶ Developed a high-value-added variation of DENKA POVAL (for use as a high-performance polyvinyl chloride dispersion agent, a cement additive for oil well construction, etc.)

Outlook for Fiscal 2019

There has been a downturn in macroeconomic trends due to the deceleration of China's economic growth reflecting U.S.-China trade tension, a looming sense of anxiety about Brexit issues and the overall future outlook of the European economies, and the slowdown of Japan's economic recovery. Nevertheless, we will remain attentive to signs of changes and agilely take necessary action to accelerate the aforementioned strategies and achieve the goals of the Denka Value-Up management plan.

Value-Shift Diagram

▶ Chloroprene rubber (CR)



Value Shift

Having developed CR via the application of unique technologies, Denka was the first in Japan to commercialize this synthetic rubber. Today, the Denka Group boasts the world's largest CR production capacity. As CR is an excellent oil- and heat-resistant material, it has become sought after for a variety of applications, including automobile parts, construction and civil engineering machinery components, medical gloves and adhesive ingredients. In addition, efforts are also under way to create new elastomer materials via, for example, the combination of CR and precision polymerization technologies.

- CR-based compound material for infrastructure**: A new compound material made using CR to prevent the age-related deterioration of concrete structures and lengthen their lifespans
- Compatibility accelerator technologies**: Technologies to improve adhesion force by facilitating the osmosis effect between the adhesion layer and the surface of the adhered material
- Technologies to control particle shape**: Technologies to alter particle shapes to reduce the elastomer's weight and give it sound insulation properties

Product Example: Evolmer[®]

Social issues	Source of value
<p>Growing need for more sophisticated technologies to support driving safety</p>	<p>The combination of elastomer technologies and precision polymerization technologies</p>

Evolmer is a new elastomer material created via the combination of elastomer technologies Denka has long accumulated over the course of the manufacture of DENKA Chloroprene and DENKA ER and its sophisticated precision polymerization technologies that have been cultivated in the course of the development of highly functional styrene-based resin. Evolmer boasts superior oil resistance and robust resilience against bending fatigue in dynamic environments. Accordingly, this product is expected to contribute to the advance of automobile technologies aimed at supporting driving safety and lengthen the lifespans of vehicles.

Living & Environment Products

Pursuing Value Creation while Delivering Products Designed to Meet Market Needs



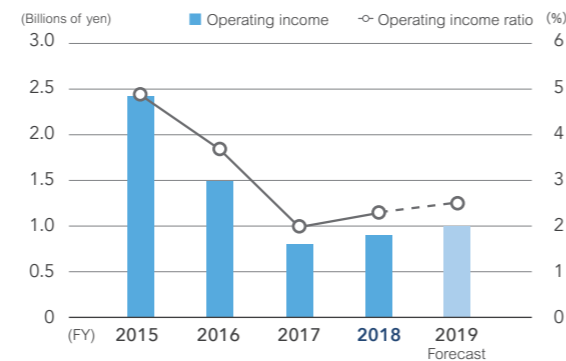
Jinichi Osuga
Executive Officer,
Living & Environment
Products

The Living & Environment Products Division will take on the pursuit of new value without insisting on limiting the search to a particular material or field and, to this end, fully take advantage of its strengths in the areas of technology and quality, with the aim of supporting the entire Group in its role as a chemical engineering division. In these ways, we will create and deliver products that satisfy market needs to in-house and external partners. Currently, the division is engaged in a range of operations associated with chemical engineering products aimed at supporting people's lifestyles and improving living environments. In line with the Denka Value-Up management plan, we will accelerate global expansion via the development of unique products designed to satisfy market needs. At the same time, we will develop and deliver solutions aimed at helping reduce environmental burdens. In these ways, we will create shared value toward resolving issues society is confronting.

Characteristics of the Business Division

Technologies	Sheet film manufacturing technologies, adhesive manufacturing and adhesion coating technologies, resin compounding technologies, plastic ejection processing technologies, etc.
Products	Rain gutters and other construction materials, food packaging materials, industrial tapes, synthetic fiber for hairpieces, fluorine-based films, etc.
Business fields	Automobiles, electric and electronics equipment, civil engineering and construction, food, aircraft and aerospace, rolling stock, medical and nursing care, the environment and energy, agriculture, logistics, etc.

Five-Year Divisional Performance Summary



Business Strategies under Denka Value-Up

1. The Market Environment

- The maturation of the domestic market and intensifying competition
- Growth in market potential reflecting the burgeoning purchasing power of emerging economies
- Growing public need for environmental load reduction
- Growing interest in food safety

2. Strategies

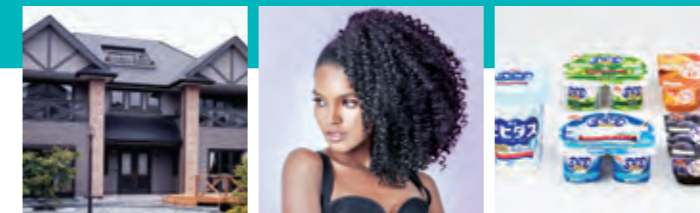
- Expand the lineup of specialty products in the commodity businesses while promoting the development of specialty businesses
- Seek new applications of fluorine-based films in the fields of mobility, infrastructure and commercial graphics
- Promote the global marketing of industrial tapes and synthetic fiber for hairpieces while enhancing their profitability
- Develop products that give due consideration to environmental concerns arising from plastics
- Strengthen our marketing capabilities to create new markets and new value

Main Achievements in Fiscal 2018

- ▶ Engaged in development activities to create an environment-friendly food packaging material and thin adhesive tape with an eye to addressing plastic-induced environmental problems that have become the subject of international debate
- ▶ Promoted the development of fluorine-based films targeting the automotive field
- ▶ Improved the profitability of synthetic fiber for hairpieces by scrutinizing every cost element, with Luxeena, a strategic product, achieving greater sales in the U.S. market
- ▶ Launched a dedicated team charged with creating products that accurately satisfy market needs

Outlook for Fiscal 2019

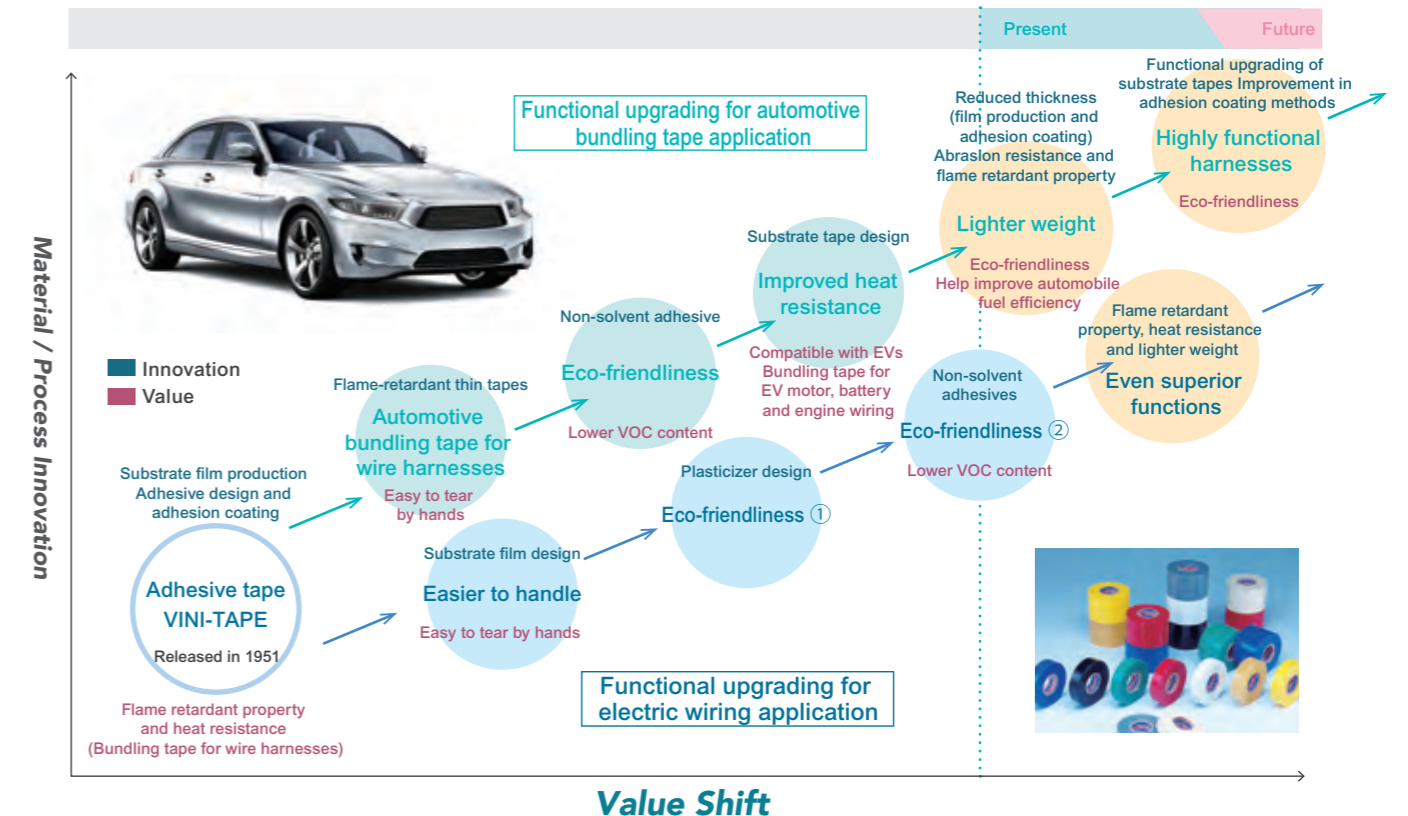
- ▶ Promote the development of specialty products in the commodity businesses
- ▶ Push ahead with marketing activities aimed at getting our specialty products on track as materials chosen by major manufacturers
- ▶ Step up other sales and marketing activities in a way that fully takes advantage of our strengths in the areas of technology and quality
- ▶ Proactively address plastic-induced environmental problems via involvement in Reduce, Recycle, Reuse and Renew



An example of housing made using TOYO GUTTERS (hard polyvinyl chloride rain gutters)
TOYOKALON (synthetic fiber for wigs and hairpieces)
Examples of finished products made using DENKA THERMOSHEET (packaging materials for food containers)

Value-Shift Diagram

Business development centered on adhesive tapes



In 1951, Denka became the first in Japan to commercialize a vinyl chloride-based insulated adhesive tape via the release of VINI-TAPE. Since then, we have long endeavored to improve our technologies, securing a robust product lineup for automobile bundling tape and electric wiring applications. Looking ahead, we will create tapes with even more superior functions and lighter weight while improving adhesives and other elements to deliver products with even smaller environmental footprints.

- Wire harness** - An electrical wiring assembly for use in equipment like automobiles and home appliances to transmit electronic signals and power
- Non-solvent adhesive** - Aqueous adhesive designed with due consideration given to environmental concerns

Product Example Cold-resistant thin harness tape



The thinnest and lightest tape in the industry, this product is used as an adhesive tape for bundling automobile wire harnesses—essential car components that transmit electronic signals and power—designed for vehicles operating in harsh environments, such as those in cold regions. Denka is the first Japanese company to commercialize a vinyl chloride-based tape of this kind. Building on its accumulated technological capabilities and expertise, Denka is currently striving to meet customer requests for solutions that help reduce the weight of automobile parts while enhancing their safety and reliability in the face of the ever greater popularity of EVs and the emergence of autonomous driving systems.

Denka's Approach to ESG-Oriented Management

CSR Management

A Message from the Officer in Charge of CSR



Toshio Imai
Director,
Managing
Executive Officer

Fulfilling Our Social Responsibility and Living up to Stakeholder Expectations as a Trustworthy Corporate Group True to The Denka Value, Our Corporate Philosophy

The Denka Group has defined "Taking on the challenge of expanding the possibilities of chemistry to create new value and contribute to sound social development" as the Denka Mission while specifying CSR materiality issues that have to be prioritized. The Denka Value-Up management plan is designed to help us place strong focus on these pursuits.

Moreover, we are determined to pull our weight in international efforts aimed at realizing the United Nations Sustainable Development Goals (SDGs), a set of universal targets encompassing such matters as infectious disease prevention, climate change countermeasures and high-strength infrastructure development. Believing that we can contribute to these fields in unique ways, we have placed strong emphasis on the SDGs in corporate management while reviewing our priorities with regard to CSR materiality issues to strengthen our foundation in environmental, social and governance (ESG) aspects, with the aim of living up to stakeholder trust and expectations.

Denka Group CSR Basic Policies

Denka established the Denka Group CSR Basic Policies, which are designed to provide underlying principles with regard to the practice of The Denka Value, a corporate philosophy serving as a cornerstone for all of its business activities from the perspective of addressing ESG issues.

We believe that contributing to a sustainable society is an integral part of our corporate activities and is essential to fulfilling our corporate social responsibilities. With this in mind, we have identified CSR materiality issues through stakeholder dialogue, specifying areas of focus in terms of CSR activities for all Group members. Taking a forward-looking approach, we are also working in tandem with our business partners to contribute to SDGs and other initiatives aimed at addressing issues the whole of humanity is now confronting.

Furthermore, we recognize that strict compliance is a prerequisite for continued business operations. Accordingly, we will strive to develop an effective governance system, strictly complying with laws, regulations and international rules in the course of operations while maintaining a strong moral compass. Taking the aforementioned factors into account, we will practice the ten principles described below in furtherance of our efforts to fulfill our responsibilities as a corporate citizen. (Established on August 27, 2018)

E Environmental	Environmental preservation and protection	We will proactively facilitate the use of clean energy, take on the development of eco-friendly products and technologies, and promote energy-saving and resource-recycling measures. By doing so, we will help preserve and protect the global environment.
	S Social	Value creation via manufacturing
S Social	Prioritization of safety	We will steadfastly abide by our policy of placing the utmost priority on occupational safety, employee health, facility security and disaster prevention in all aspects of our business activities. In this way, we will create a workplace free of accidents and disasters.
	Relationships of trust with customers	We will commit ourselves to delivering products with superior quality while providing sufficient product information to ensure customer satisfaction. We will also remain sincere in customer relations, thereby maintaining relationships of trust with customers.
	Diversity and work-life balance	Respecting the diversity, personalities and unique qualities of all those working for the Denka Group, we will strive to help them determine optimal working styles to ensure they realize their full potential. At the same time, we will create a vibrant workplace, promote employee health and realize a safety-oriented corporate culture.
	Respect for human rights	We respect the human rights of all people while striving to raise human rights awareness and helping to eradicate all kinds of human rights infringement.
	Information disclosure and stakeholder dialogue	We will disclose corporate information in a proactive, effective and fair manner, thereby maintaining constructive dialogue with a wide range of stakeholders.
	Social contribution	As a good corporate citizen, we will proactively play a positive role in society to contribute to sound and sustainable social development.
G Governance	Fair business conduct	We will engage in fair and free competition, appropriate dealings and responsible procurement while maintaining sound relationships with political bodies and administrative agencies.
	Risk Management	In addition to remaining apprised of risks that may affect our corporate activities, we will implement thoroughgoing and organized crisis management measures to secure resilience against natural disasters, terrorism, cyberattacks and other events that cause serious threats to our operations.

Determination and Review of CSR Materiality Issues

In line with its corporate philosophy, the Denka Group identified priority CSR materiality issues that, on April 24, 2017, its Management Committee narrowed down to 13 items, each of which is a matter of critical importance for a chemical manufacturer committed to fulfilling its social responsibilities.

Many of the United Nations SDGs, which set targets for 2030, have strong similarities with Denka's initiatives in priority fields (healthcare, the environment and energy and high-value-added infrastructure). In line with the Denka Value-Up management plan growth strategies, the Company has been focusing management resources on these initiatives; however, in fiscal 2019, Denka is stepping up its commitment to pursuing the SDGs as an aspect of that plan, prompting a review of CSR materiality issues.

Going forward, we will push ahead with efforts to help realize the SDGs in line with the Denka Value-Up management plan. Simultaneously, we will engage in in-depth dialogue with stakeholders, thereby improving our CSR activities on an ongoing basis.

Relationship between Denka's Materiality Issues and the SDGs

Category	CSR Materiality Issues (13 items)	Relevant SDGs	
		Fulfill manufacturers' responsibilities	Provide solutions
Prioritization of safety	Reinforce security and disaster prevention measures	 	
	Maintain occupational safety and health while creating a vibrant and comfortable workplace environment		
Products and technologies	Create new products and technologies that contribute to sound social development	 	
	Ensure product safety	 	
Corporate governance Corporate activities deserving stakeholder trust	Ensure that our corporate philosophy is embraced by every employee and transform our corporate culture	 	
	Improve corporate governance		
	Maintain strict compliance with laws, regulations and corporate ethics		
Employee happiness	Nurture human resources	 	
	Embrace diversity and offer equal opportunities	 	
Environmental preservation	Prevent air, water, soil and other environmental pollution	 	
	Promote climate change countermeasures (curb global warming, reduce GHG emissions and adapt to climate changes)	 	
Dialogue with society Partnership	Maintain appropriate and timely disclosure of corporate information and establish bidirectional communications		

Corporate Governance



A Strategy and R&D Policy Presentation Meeting

A Message from an Outside Director



Denka's Strength in Governance, Backed by Sincerity, Helps the Company Navigate a Fast-Changing Business Environment

Akio Yamamoto

Outside Director

Today, Denka is undergoing the most drastic change in its history, which spans more than 100 years.

Specifically, the Company is developing functional materials for use in IoT and 5G communication devices as well as materials for EVs and other emerging mobility infrastructure. Denka is also engaged in proactive investment in the life science business, such as infectious disease and lifestyle-related disease countermeasures. Thus, Denka's business portfolio is in the process of radical transition. Furthermore, Denka is now serving markets worldwide, with its R&D and production network becoming ever more globalized. These changes necessarily entail a number of new challenges that have to be overcome. Accordingly, Denka must redevelop its organizational structure and management system while raising the awareness of each employee.

In recent years, a string of corporate mishaps have been exposed in a range of business sectors, causing the general public to severely scrutinize their governance models and question whether these models are truly effective. First and foremost, businesses are being called to contribute to society via the creation of new products and new value. This kind of pursuit requires forward-looking conceptualization capabilities that help blaze a new trail into the future and a pioneering spirit that encourages frontline employees to engage in dynamic action and risk-taking to achieve higher goals. However, this pursuit must also be supported by sound corporate governance, an essential component of any business's efforts to achieve medium- to long-term growth in corporate value.

With these factors in mind, I will explain the status of Denka's corporate governance from the perspective of outside director.

Denka's Board of Directors consists of 12 directors, five of whom are outside directors, with members of the Audit Committee being appointed from both in-house directors and outside directors. Prior to assuming office as one of Denka's outside directors, I had been an expatriate for 15 years as part of my experience in a trading company in addition to being deeply involved in human resource development and legal compliance. The other four outside directors, appointed from a diverse range of business fields, also boast abundant experience and extensive expertise in their areas of specialty.

Notable features of the Board of Directors' operations include a significant volume of information being offered to outside directors to help them understand Denka's operations as well as active interaction between board members. For example, Denka holds periodic "Strategy and R&D Policy Presentation Meetings" in which outside directors are briefed on strategies and R&D policies being implemented by each business division as well as the Company's financial strategies, human resource management policies and other key information regarding its overall operations from a medium- to long-term perspective. By encouraging attendees to actively deliberate on important management matters, these meetings have proven effective. Also, presentations are given to outside directors prior to monthly Board of Directors meetings, with the aim of ensuring that they are well-informed about all agenda items to be submitted to Board of Directors meetings. These presentations are followed by Q&A sessions as well as the serious and unreserved exchange of opinions, which sometimes include harsh objections. In the course of these sessions, outside directors often contribute valuable insights regarding the positioning of agenda items in the context of medium- to long-term business strategies while furnishing advice as specialists with regard to the management of various risk factors in the face of business and geopolitical situations, the handling of legal affairs associated with domestic and overseas operations, the preparation of financial statements and Denka's approach to ESG issues and the United Nations SDGs. In short, all agenda items are carefully examined before they are discussed and finalized by the Board of Directors. In addition, tablet terminals furnished to all directors provide comprehensive updates on topics to be addressed by the Board of Directors. So, prior to each meeting, they are expected to intensively review a large volume of information.

Moreover, the monthly "D&A Round Table" meetings

provide directors with opportunities to engage in the frank exchange of opinions on Denka's corporate philosophy, growth strategies, corporate governance and other foundational issues affecting the Company's business operations. Denka also maintains such bodies as the Audit Committee, the Nomination and Remuneration Advisory Committee and the Outside Director Liaison Meetings in an appropriate manner. As such, Denka's efforts to improve its corporate governance have been supported by a number of discussions at the Board of Directors and other key meetings. Over the course of this process, outside directors and in-house directors, the latter of whom are charged with the execution of day-to-day operations, seriously engage one another, prioritizing improving the effectiveness of Denka's governance framework and management approach.

On a day-to-day basis, it is often hard to immediately determine whether our business judgments will succeed or fail. Also, there is a lingering sense of uncertainty regarding future global megatrends. Predictably, Denka will face various challenges and changes in its business environment. However, its robust corporate culture, which values sincerity and steadfastness and has been nurtured over the course of 100 years, is being steadily passed down to younger generations despite drastic changes in its business portfolio. As I expect Denka to engage in a variety of ongoing initiatives to achieve its future ideals via the implementation of effective growth strategies and corporate governance measures, I am determined to fulfill my duties as an outside director and help the Company realize sound corporate growth and improve its corporate value.

Profile of Akio Yamamoto

April 1974	Joined Mitsui & Co., Ltd.
April 1999	President of Mitsui & Co. Benelux S. A./N. V.
April 2004	Deputy General Manager, Synthetic Resin & Inorganic Chemicals Division, Mitsui & Co., Ltd.
April 2007	Executive Officer of Mitsui & Co., Ltd. (until March 2010), President of Mitsui & Co. (Thailand) Ltd.
April 2009	President and CEO of Mitsui Bussan Plastics Trade Co., Ltd. (Currently Mitsui & Co. Plastics Ltd.) (until June 2014)
June 2014	Advisor of Mitsui & Co. Plastics Ltd. (until June 2015)
June 2015	Outside Director of Denka Company Limited (current position)

Basic Approach to Corporate Governance

In order to fulfill the expectations and trust of its many stakeholders, including shareholders, customers, local society and employees, based on "The Denka Value" (corporate philosophy), which serves as the cornerstone for all the corporate activities undertaken by the Denka Group, the Company strives to strengthen its business foundation by improving its earnings power and expanding the scope of operations while also working to improve corporate value by making every effort to continue being a company that can win the trust and support of society.

The Company considers corporate governance to be the bedrock on which the above rests, and so we have striven to strengthen governance, in order to fulfill the responsibilities we owe to all our stakeholders and ensure the transparency and soundness of our management.

Transition to a Company with an Audit Committee

Acutely aware of the importance of securing solid corporate governance, Denka has introduced an executive officer system aimed at ensuring functional separation between personnel charged with supervision and decision making and those charged with business execution. Moreover, Denka appointed three outside directors and two outside members of the Audit & Supervisory Board. As such, Denka has strengthened functions of the Board of Directors and the Audit & Supervisory Board in terms of supervision and auditing, respectively, with the aim of establishing a robust foundation for fair and transparent business management.

In June 2019, Denka's decision to transition to a Company with an Audit Committee was approved at the 160th Ordinary General Meeting of Shareholders. This transition entails appointing individuals who serve as Audit Committee members and are allowed to cast a vote at Board of Directors meetings in addition to being expected to help enhance the latter's supervisory functions and secure an even more solid management structure.

Purposes of Transition to a Company with an Audit Committee

Step up separation between supervisory and execution functions

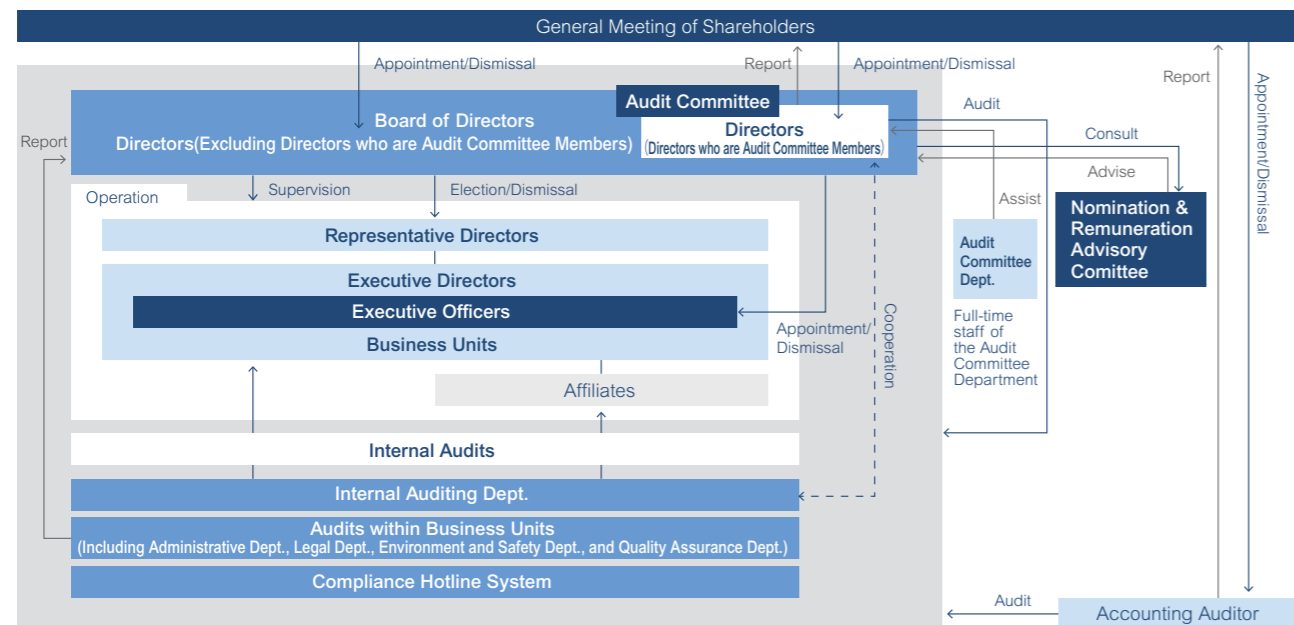
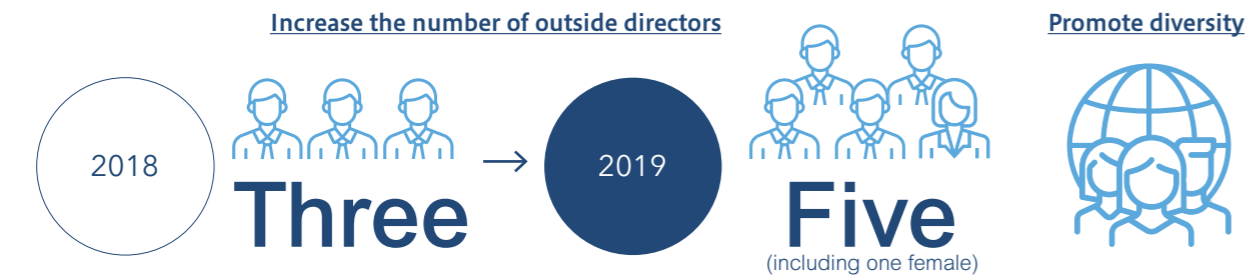
Improve the transparency and fairness of management while realizing speedier and dynamic decision making

Increase the number of outside directors

The number of outside directors grew from three to five, one of whom is female

Promote diversity

Ensure that the composition of Board members is diverse and well-balanced in terms of their expertise, experience, competency, gender and nationality



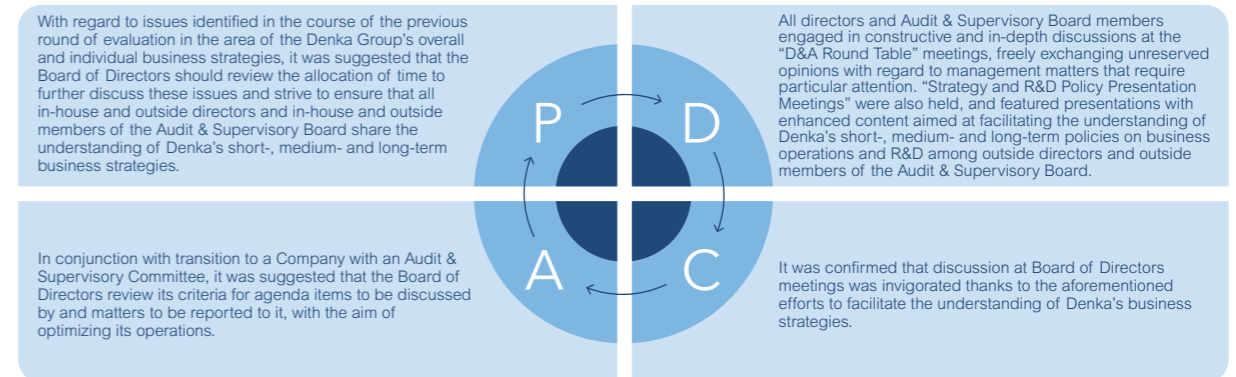
Evaluation of the Effectiveness of the Board of Directors

(1) Method of Evaluation

As it did in the previous fiscal year, the Company analyzed and evaluated the effectiveness of the Board of Directors by having individual directors and Audit & Supervisory Board members complete the "Self Evaluation Questionnaire," which covers items related to the effectiveness of the Board of Directors, such as scale, composition, operation and 20 other items, and discussing the questionnaire results at Board of Directors meetings.

(2) Summary of Evaluation Results and Future Efforts

The Company confirmed that discussion at the Board of Directors was invigorated thanks to appropriate Board size and composition (in terms of getting the right balance of expertise, experience, competency and diversity) and that meetings were of an appropriate frequency and duration, as well as the provision of prior explanation of agenda items and other initiatives aimed at helping outside directors and outside members of the Audit & Supervisory Board better understand Denka's operations and make proactive contributions at the Board of Directors meetings.



Initiatives Being Undertaken Thus Far to Improve Corporate Governance

	Purposes	Initiatives
2007	Speed up decision making	● Halved the number of directors ● Introduced an executive officer system
2008	Ensure that all directors who supervise and monitor business execution engage with their peers on equal footing at Board of Directors meetings	● Abolished senior managing and managing director positions
	Secure clear functional separation between those charged with business execution and those charged with monitoring and supervision	● Delegated executive authorities and positions from directors to executive officers
	Flexibly assess the adequacy of each director	● Shortened the term of office for directors to one year
2008	Ensure stringent supervision of the Company's operations by incorporating external perspectives	● Appointed two outside directors, securing a total of four external individuals, including the mandatory two outside Audit & Supervisory Board members, for overseeing Denka's management
	Provide robust opportunities to interact with each other outside Board of Directors meetings to develop a structure enabling directors to contribute meaningful insights	● Made it a rule to hold periodic meetings in which outside directors exchange opinions with top management
	Improve authorization process to realize faster decision making by facilitating in-depth discussion focused on important management matters	● Established the Management Committee, consisting of in-house directors and in-house members of the Audit & Supervisory Board as well as some executive officers
2015	Enhance the governance structure to improve management transparency and soundness	● Increased the number of outside directors from two to three while decreasing the prescribed number of overall directors by two
	Create opportunities for in-house and outside directors and in-house and outside members of the Audit & Supervisory Board to engage in constructive discussion, help them freely exchange frank opinions and facilitate information sharing and closer collaboration	● Decided to hold monthly exchange meetings for all directors and Audit & Supervisory Board members, stepping up the previous practice of holding biannual exchange meetings for these individuals
	Optimize corporate governance aimed at securing sustainable growth and a medium- to long-term improvement in corporate value	● Established the Denka Corporate Governance Guidelines
2015	Facilitate the understanding of Denka's operations and invigorate discussion at Board of Directors meetings	● Enhanced the content of prior briefings on individual agenda items requiring closer explanation for outside directors and outside Audit & Supervisory Board members
	Help outside directors and outside Audit & Supervisory Board members exchange their insights and share their understanding of the status of Denka's operations	● Decided to hold the Outside Director Liaison Meetings on a quarterly basis
	Facilitate the understanding of Denka's short-, medium- and long-term policies on business operations and R&D	● Decided to hold the biannual Strategy and R&D Policy Presentation Meetings for outside directors and outside Audit & Supervisory Board members
2016	Help the Board of Directors ensure robust auditing of and supervision over business operations being executed by executive officers	● Clarified the content of meeting handouts on agenda items and reporting materials distributed at Board of Directors meetings
	Enhance the effectiveness of the Board of Directors	● Instituted the annual evaluation of the Board of Directors' operations to assess their effectiveness with the involvement of all directors and all Audit & Supervisory Board members while making it a rule to disclose its findings via the Corporate Governance Report
2017	Ensure that outside directors and outside Audit & Supervisory Board members contribute diverse opinions and advice to the Board of Directors with regard to such governance issues as director nomination and remuneration as well as other important management matters, with the aim of securing the fairness and objectivity of management judgment	● Established the Management Advisory Committee attended by all outside directors, all outside Audit & Supervisory Board members, the Chairman and the President & CEO
2019	Appoint directors with concurrent membership in the Audit Committee to speed up decision making while strengthening the Board of Directors' supervisory functions, with the aim of improving corporate governance and achieving growth in corporate value	● Monthly exchange meetings for all directors and Audit & Supervisory Board members were formally named the D&A Round Table meetings
		● Transitioned from a Company with an Audit & Supervisory Board to a Company with an Audit Committee
		● The Management Advisory Committee was renamed the Nomination and Remuneration Advisory Committee

Concepts on the Appointment of Directors

With the aim of practicing The Denka Value, our corporate philosophy, we are promoting the Denka Value-Up management plan, to this end strengthening our management structure supported by directors and executive officers while upgrading our governance systems and supervisory functions.

Director candidates are nominated from among individuals who have abundant experience and a strong track record in Denka's business divisions and are equipped with sufficient knowledge and specialist expertise for the position. Outside director candidates are nominated from among those who boast extensive knowledge backed by abundant business experience as well as distinctive strengths in their area of specialty so that they can bring their insights on how to achieve sustainable growth and enhance corporate value. With regard to the overall composition of board members, we focus on maintaining a diverse and well-balanced composition in terms of expertise, experience, competency, gender and nationality. We also aim to maintain a sufficient number of independent outside directors to ensure that they account for at least one third of director membership. Currently, the Company's Board of Directors achieves this targeted composition.

Policies on Director Remuneration

We have set remuneration for each director based on their roles and responsibilities within the limit of the total amount approved by the General Meeting of Shareholders. The representative directors draft the remuneration plan and the Board of Directors decides on the content of remuneration after receiving advice and recommendations from the Nomination and Remuneration Advisory Committee.

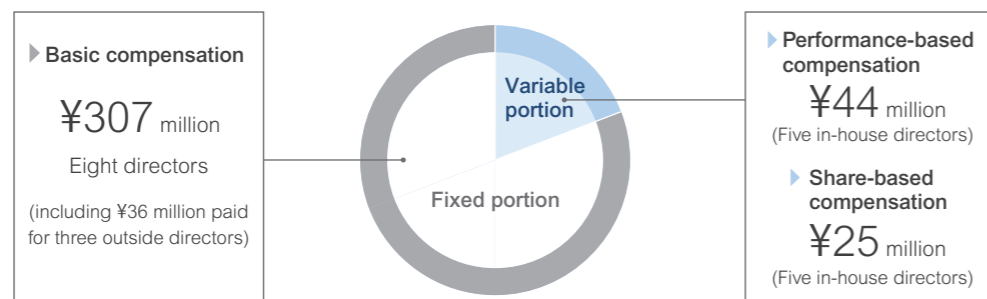
Remuneration for directors consists of monthly basic compensation set at a fixed amount (paid to all directors) as well as performance-based compensation and share-based compensation (neither of which are paid to outside directors or in-house directors with concurrent membership in the Audit Committee).

The value of the performance-based compensation is determined in step with consolidated operating income for each fiscal year. However, this portion may be decreased or fully withheld in cases where consolidated operating income did not reach a certain amount or the Company was found to be involved in compliance violations and other significant misconduct.

Share-based compensation is intended to ensure that directors share shareholders' interests and risks regarding stock price fluctuations. By doing so, we aim to instill a strong sense of purposefulness toward achieving medium- to long-term growth in corporate performance and corporate value in our directors.

In addition, remuneration paid to directors with concurrent membership in the Audit Committee consists only of monthly basic compensation with fixed amount. Total remuneration paid to such directors is determined within the upper limit approved by the General Meeting of Shareholders.

○Director Remuneration Paid in Fiscal 2018 ¥377 million in total



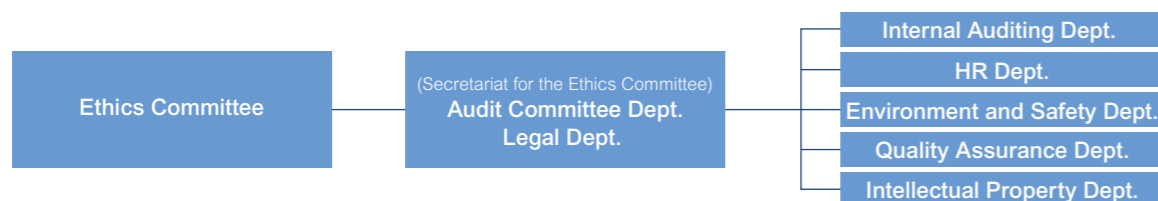
Compliance

Compliance is essential for sustainable growth. We accordingly adhere to internal rules and government legislation and refrain from acts that violate moral and ethical norms. The Denka Group Ethics Policy was established to codify Groupwide standards of conduct, while the Ethics Committee oversees the overall compliance structure and reports to management, thereby ensuring adherence to this policy.

Moreover, the Audit Committee Department, and other key business units, including the Legal, Internal Auditing, HR, Environment and Safety, Quality Assurance and Intellectual Property departments, ensure thorough legal compliance in their respective areas of specialty.

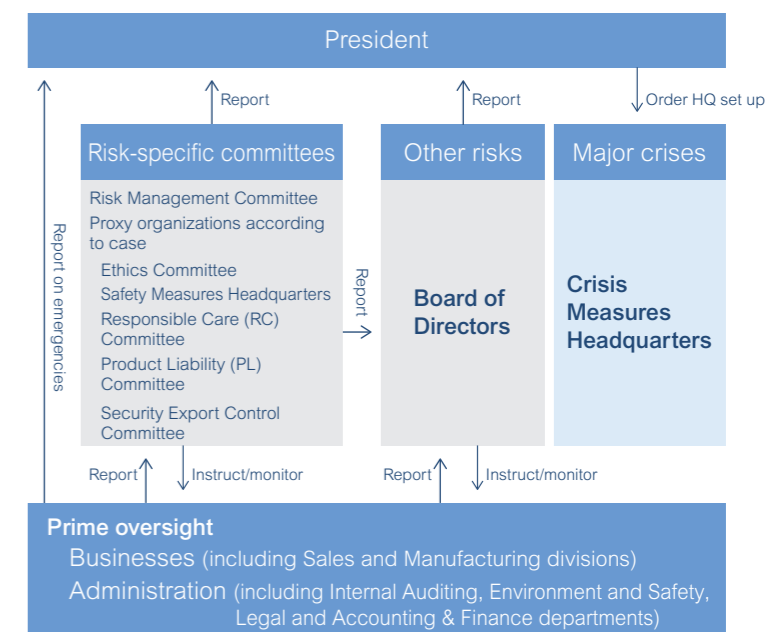
In addition, we have identified more than dozen basic legal fields that we are focused on maintaining Group operations in strict compliance with. To this end, we have prepared a "legal hazard map" aimed at analyzing legal and regulatory risk that may affect each Group company. Employing this map, we are developing and reviewing in-house rules for securing compliance in each legal field while formulating compliance education plans. This approach enables us to enhance the efficiency and effectiveness of our initiatives aimed at accurately assessing the compliance status of and ensuring strict legal compliance by business units throughout the Denka Group.

Also, Denka's Legal Department and Career Value-Up Center are spearheading efforts to provide robust compliance education for employees at each Denka Group company. For example, employees at Denka's local subsidiary in Malaysia underwent comprehensive compliance training in December 2018. With the aid of a local law firm, they studied how to prevent insider trading and other employee misconduct as well as anti-monopoly laws, information security and other compliance topics.



Risk Management

An essential part of corporate governance is understanding the diverse and numerous risks inherent in corporate activities and exerting proper risk control. In general, each business unit is responsible for identifying and managing specific risks. For environmental, safety, product liability and export control issues that affect the entire Company, we have in place special sections and permanent committees to handle matters.



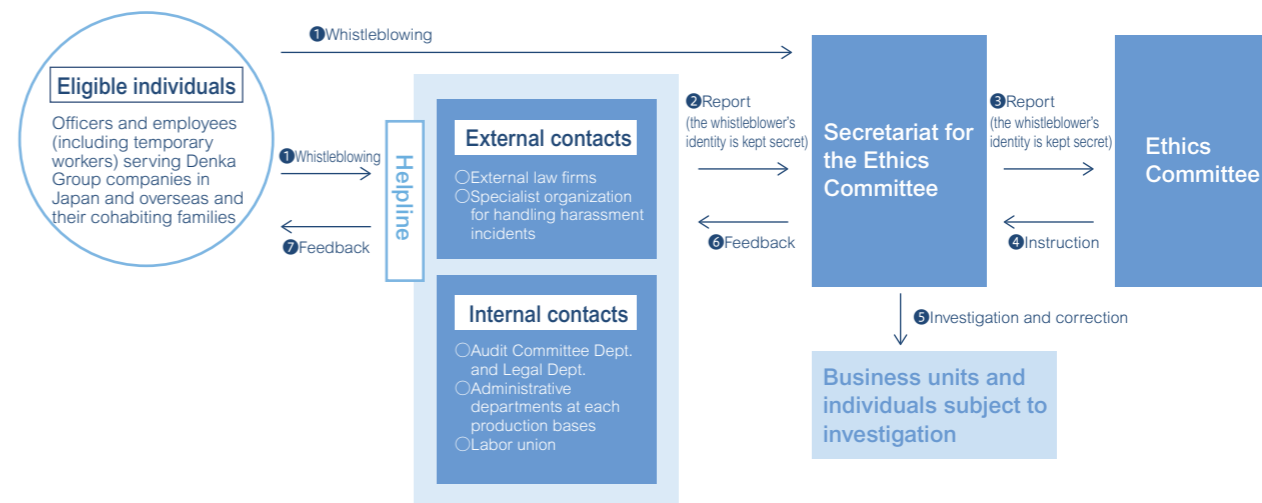
Compliance Hotline System

Aiming to create a more robust system capable of accepting and properly handling a broad range of compliance-related reports within the Group from employees around the globe, in October 2018 Denka established new rules on whistleblowing based on the latest guidelines formulated by the Consumer Affairs Agency. In line with these rules, we have thus upgraded our conventional compliance hotline system into the Denka Group Helpline. Among the changes, we expanded the scope of eligibility for individuals making reports and began accepting reporting from cohabiting families of officers and employees while establishing external contacts capable of receiving reporting in multiple languages. Aiming to encourage the proactive use of this helpline, we sent out a message from the Company president to all Denka Group officers and employees while distributing a handbook and card featuring instructions about how to contact and use the helpline.

Although the number of reports received annually via the former compliance hotline system ranged from one to four, the number of reports received in fiscal 2018 increased to seven, reflecting the October 2018 upgrading of said system. In response to these reports, efforts are now under way to swiftly yet prudently investigate in detail the problems brought to our attention. Specifically, dedicated teams were launched to address each whistleblowing case and are acting in collaboration with external lawyers to ensure that necessary correction measures are implemented in a way that protects whistleblowers' privacy.

Number of reports	Fiscal year	2014	2015	2016	2017	2018
Number		2	1	4	4	7

Denka Group Helpline System Diagram





Directors

■ Shinsuke Yoshitaka

Chairman (Born February 1, 1951)

Under the corporate philosophy, "The Denka Value," as Chairman of the Board of Directors I will make every effort to boost the corporate value of the Company with good faith and determination while constantly endeavoring to realize management that is sound and transparent from the perspective of our stakeholders.

■ Manabu Yamamoto

Representative Director, President & CEO (Born March 31, 1956)

In order to meet the expectations and trust of all stakeholders, I will steadily promote the management plan, "Denka Value-Up," which is now in its second year, and pursue sustainable growth even in rapidly changing markets, through the further specialization of our business structure and productivity improvement while aiming to ensure Denka is a sound company that fulfills its social responsibility.

■ Akio Yamamoto

Outside Director (Born December 2, 1951)

Amid major changes in the global market environment, I intend to contribute to the Company's sound operation and increasing corporate value while prioritizing an awareness of circumstances at business sites and remaining committed to a medium- to long-term perspective and a strong stance of fairness.

■ Tatsutsugu Fujihara

Outside Director (Born November 23, 1952)

I will always approach matters from a fair perspective, and intend to contribute to the growth of the Company in the true sense, not simply business performance in terms of numbers.

■ Norihiro Shimizu

Director (Born October 2, 1955)

Through continuous innovation leveraging the comprehensive capabilities of the Group, I am committed to ensuring sustainable growth and improving corporate value by implementing business strategies at individual businesses in a way that strikes a balance between profitability and sustainability.

■ Masaharu Suzuki

Director (Born December 11, 1955)

I will endeavor to boost the corporate value of the Company by promoting ESG-oriented management from a global perspective.

■ Toshio Imai

Director (Born January 25, 1959)

I will focus on achieving the targets in the management plan, "Denka Value-Up," based on the corporate philosophy, "The Denka Value," thus achieving "sustained growth" and "sound growth," as I endeavor to boost the corporate value of the Company.

■ Mitsukuni Ayabe

Director (Born September 23, 1952)
(Audit Committee Member)

I am committed to improving corporate value and creating a company more trusted by society, through audits of the legality and validity of the execution of business duties, etc.

■ Junichi Kimura

Director (Born August 12, 1958)
(Audit Committee Member)

As an Audit Committee Member, I intend to contribute to the Company becoming a highly sustainable company by approaching audits and other duties in a fair and transparent manner, in order to satisfy all stakeholders.

■ Yasuo Sato

Outside Director (Born September 30, 1942)
(Audit Committee Member)

In a spirit of rationality and fairness, I am determined to contribute to the medium- to long-term growth of the Company and to boost corporate value while aiming for the steady implementation and further development of corporate governance.

■ Toshio Kinoshita

Outside Director (Born April 12, 1949)
(Audit Committee Member)

I shall exert every effort to strengthen corporate governance and build a management environment that can accurately implement corporate governance, in order to boost corporate value and shareholder value.

■ Hiroko Yamamoto

Outside Director (Born February 16, 1956)
(Audit Committee Member)

Drawing on my experience and knowledge as a lawyer, I intend to perform my responsibilities as a Director who is an Audit Committee Member, while focusing on the fullest compliance and the effectiveness of corporate governance in a spirit of diversity.



Initiatives to Preserve and Protect the Environment

A Message from the Officer in Charge of Environmental Measures

Doing Our Best as a Chemical Product Manufacturer to Live up to Society's Expectations and Trust by Preserving and Protecting the Environment



Hideki Hirano
Managing Executive Officer,
Supervisor of Environmental Measures Promotion

Amid fears engendered by the growing impact of climate change attributable to global warming, international efforts are currently under way to achieve the Paris Agreement's goal of keeping the average global temperature rise to less than 2°C above pre-industrial levels. As a company engaged in the development and manufacture of chemical products, Denka is responsible for and is determined to play significant roles in these efforts.

I am charged with spearheading particularly important environmental measures aimed at countering greenhouse gas (GHG) emissions, waste disposal and other environmental footprints attributable to Group operations in addition to developing climate scenarios to this end. Under the defined numerical targets, we are thus striving to ensure that measures being undertaken by Denka Group companies are truly effective.

Specifically, we are promoting the use of clean energy via the construction of company-owned hydroelectric power plants while reducing GHG gas emissions throughout the life cycles of our products. At the same time, each production base is endeavoring to curb the emissions of environmental load substances or to achieve zero-emissions status. In addition, ambitious projects are now under way to develop novel technologies for recycling plastic and other waste as well as innovative solutions for countering global warming. In these ways, we will live up to society's expectations and trust.

Climate Change: Risks and Opportunities

	Risks	Opportunities
1 Legal Regulations	A surge in fossil fuel and energy costs due to the enforcement of tightened CO ₂ emission regulations based on the Paris Agreement	Growth in business opportunities arising from demand for Denka's energy-saving technologies
2 Physical impact	Frequent operational disruption at manufacturing bases and other business sites due to an increase in flooding, rainstorms and mega typhoons	Growing need for ultrahigh-strength concrete that enhances the resilience of concrete structures and infrastructure components (such as expressways) as well as for quick-hardening and setting concrete that supports the timely restoration of such facilities following natural disasters
3 Others	Growing uncertainty regarding stock prices and our corporate reputation due to ever harsher scrutiny of the Company's climate change countermeasures as shareholders and investors began to place stronger focus on ESG investment	Growing need for Denka products capable of helping reduce CO ₂ emissions on the back of an overall shift to low-carbon operations among supply chain constituents

Denka's Reduction Targets for GHG Emissions

Medium-term targets (Fiscal 2030)

- Reduce GHG emissions 26% in fiscal 2030 from the fiscal 2013 level (Reduction volume: 610,000t-CO₂)
 - Reduce emissions from energy sources 20% (11% of overall emissions) (reduction volume: 260,000t-CO₂)
 - Reduce emissions from non-energy sources 9% (4% of overall emissions) (reduction volume: 90,000t-CO₂)
 - Reduce overall emissions a further 11% by employing new technologies and promoting process reforms (reduction volume: 260,000t-CO₂)

Long-term targets (Fiscal 2050)

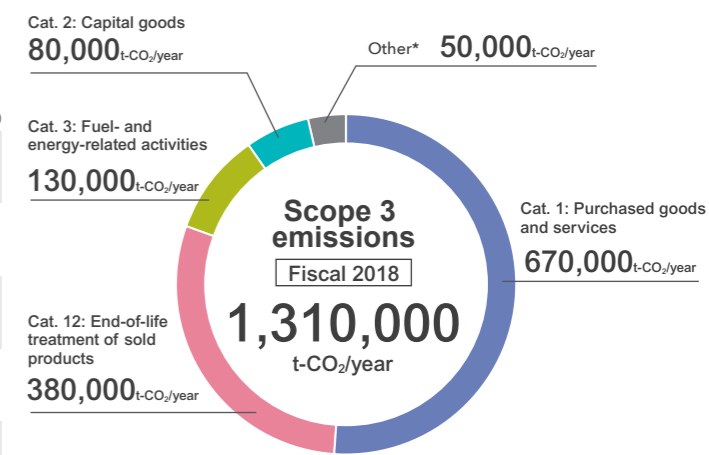
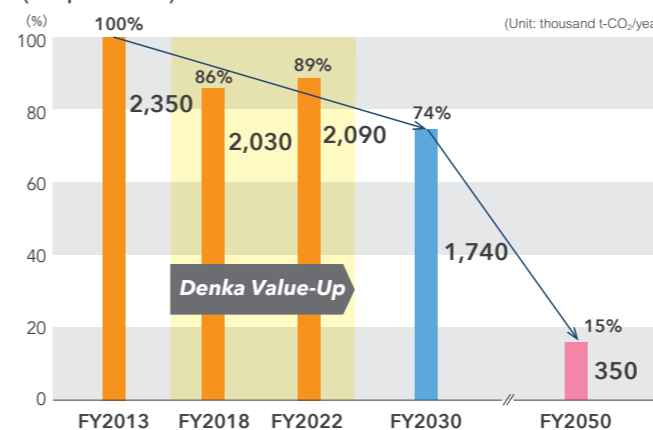
- Reduce net GHG emissions* 85% by the end of fiscal 2050 (reduction volume: 2,000,000t-CO₂)

*Net GHG emissions: Volume of GHG emissions less the volume of GHG absorption

Initiatives Aimed at Curbing GHG Emissions

Having set reduction targets for total GHG emissions as well as for the CO₂ emissions intensity index attributable to energy sources, we are systematically implementing global warming countermeasures by engaging in energy-saving initiatives and promoting the use of renewable energy. The Company has also formulated medium- to long-term targets (for fiscal 2030 and 2050) in light of the "2°C target" proposed in the Paris Agreement.

Medium- to Long-Term Reduction Targets for GHG Emissions (Scope 1 and 2)



Note: GHG emissions associated with "Category 10: Processing of sold products" and "Category 11: Use of sold products" have been excluded due to difficulties in performing accurate and reliable calculation. * GHG emissions attributable to waste emissions associated with business operations as well as those attributable to transportation, distribution and employees' business trips and commuting

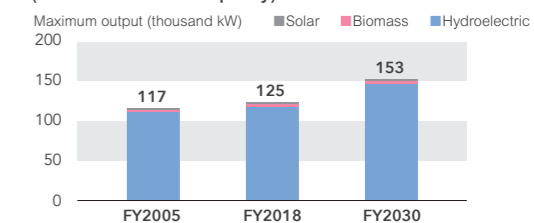
Promoting the Use of Clean Energy

A stable power supply and efficient energy usage are essential to the manufacture of industrial chemical products. Since its founding, Denka has proactively developed a network of hydroelectric power plants. Today, this network consists of 15 power plants, including those owned by Kurobegawa Electric Power Company, a joint venture established by Denka and a local power company, and is supplying energy equivalent to approximately 30% of Denka's overall energy consumption. Meanwhile, at our thermal power plants, which are being converted to run on natural gas instead of heavy oil, we are working to introduce high-efficiency gas turbine generators. We also utilize heat from cement production for power generation while employing biomass boilers for the same purpose with the aim of reducing CO₂ emissions attributable to energy use. Going forward, we will engage in corporate activities that give due consideration to environmental concerns, thereby contributing to the creation of a low-carbon society.

A Hydroelectric Power Plant under Construction, Aiming to Reduce CO₂ Emissions even Further

The New Omigawa Power Plant (maximum output: approximately 8,100 kW; planned operational kickoff: December 2020) is under construction upstream of the Omigawa Power Plant. Thus far, the groundwork for the plant building is under way along with the development of sites around the facility premises. Moreover, Kurobegawa Electric Power Company is currently constructing the New Himekawa Power Plant No. 6 (maximum output: approximately 28,000kW; planned operational kickoff: April 2022). These facilities are expected to contribute to a total reduction in CO₂ emissions of approximately 35,000 tons per year once operations are under way.

Long-Term Outlook for Denka's Renewable Energy (Power Generation Capacity)



Note: The calculation of the figures presented above incorporated 50% of annual output from power plants run by Kurobegawa Electric Power Company (jointly owned with Hokuriku Electric Power Company).



Contribution to the Development of a Recycling-Oriented Society (resource recycling in cement production)

We are promoting a switchover of raw materials and fuels used by cement production facilities at Denka's Omi Plant (Itoigawa, Niigata Prefecture), replacing a portion of the natural minerals usually used with waste in an effort to step up resource recycling.

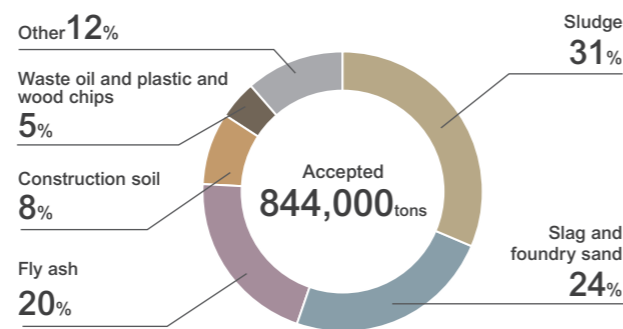
In addition, these facilities also accept byproducts from other production facilities within the Omi Plant's premises and effectively utilize them as cement materials. By doing so, we are striving to help preserve the environment.

Looking ahead, we will take full advantage of a variety of technological elements suited for the processing of waste and byproducts. Ceaselessly pushing ahead with resource recycling, we will help develop a recycling-oriented society and thereby contribute to local communities.

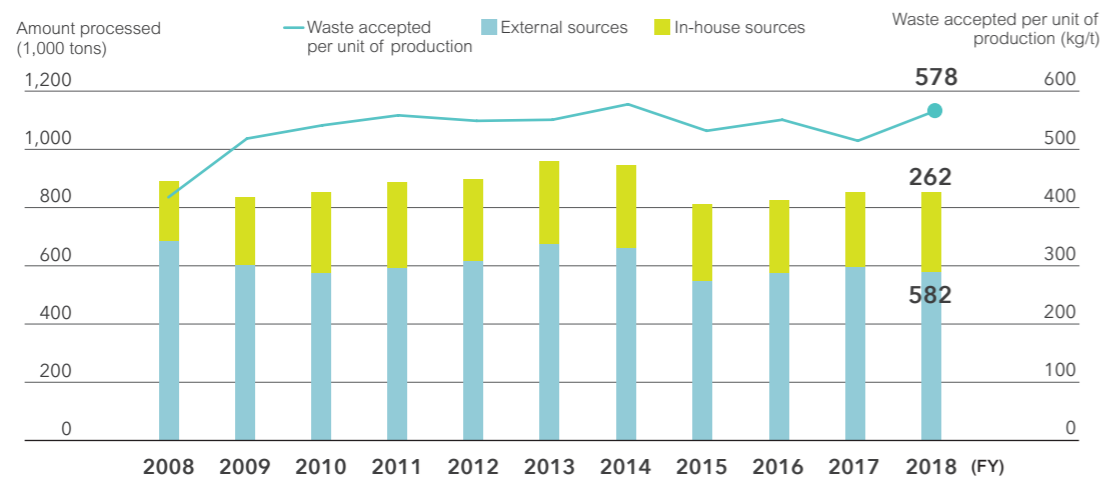
» Recycling of Urban Garbage Incinerator Ash

Our recycling operations also accept and utilize urban garbage incinerator ash as cement materials. Through these operations, we recycle a volume of incinerator ash, which is regularly emitted from incineration facilities in urban communities. In addition to contributing to the creation of a recycling-oriented society, this practice gives these communities more leeway before their final waste disposal sites are filled to capacity.

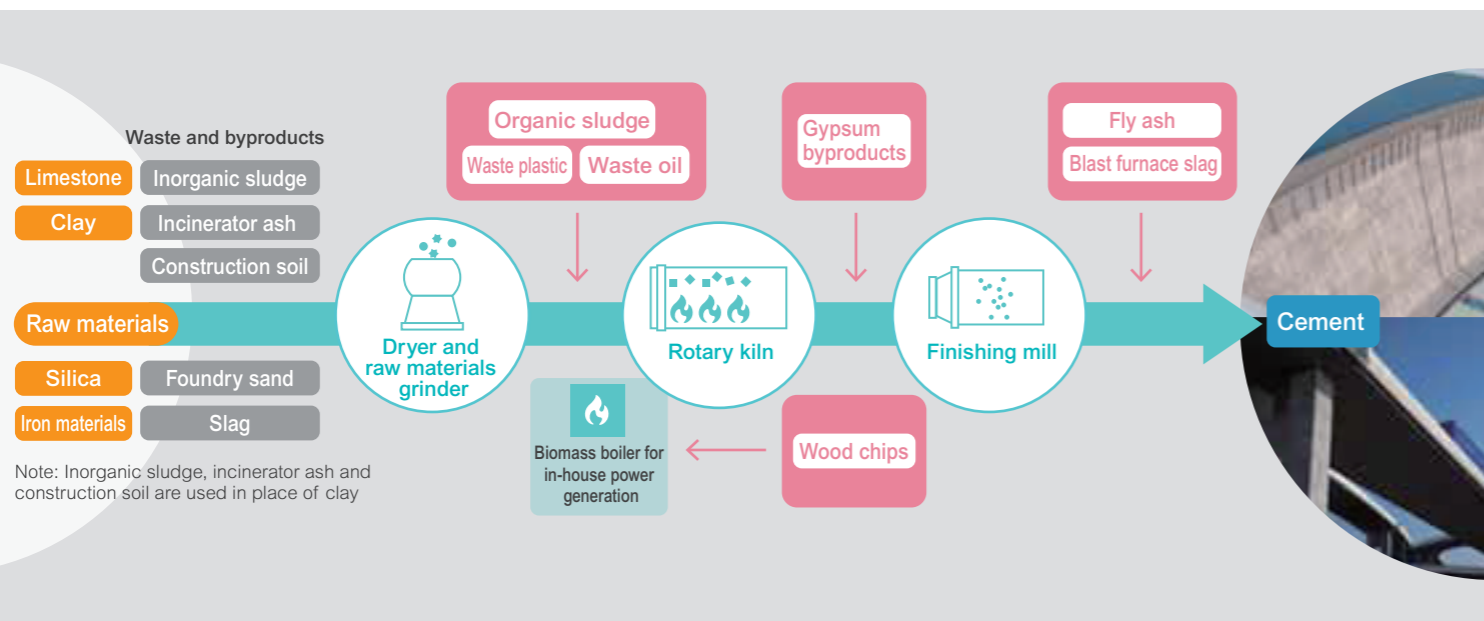
Breakdown of Waste Accepted in Fiscal 2018



Volume of Waste Accepted (total and per unit of production)



Recycling Process Flowchart



Initiatives to Reduce Marine Plastics

In September 2018, Denka co-founded the Japan Initiative for Marine Environment (JaIME) in tandem with other 21 companies, with the aim of fulfilling its responsibilities as a manufacturer and seller of plastic products. JaIME is currently engaged in the promotion of "3Rs" to help raise public awareness in countries and regions that emit a volume of waste plastics.

With the aim of addressing this problem via new product development, Denka Polymer Co., Ltd., a Group subsidiary that manufactures plastic-based food containers, released PLAPS, the industry's first bioplastic combining polylactic acid and polystyrene, as well as CLEALEAD, which is 35% lighter than amorphous polyethylene terephthalate (A-PET).

The Denka Group is thus striving to deliver innovative solutions aimed at promoting the efficient use of plastics and reducing burdens placed on the global environment, to this end taking full advantage of its comprehensive technological strengths ranging from resin material synthesis to polymer processing and molding.



A food container made of PLAPS, a combination of polylactic acid (PLA; a plastic material derived from starch and other plant products) and polystyrene (PS)

The Denka Group's Policies on the Prevention of Air, Water, Soil and Other Environmental Pollution

Denka is properly managing the volume of environmental load substances emitted from production facilities and R&D bases run by its Group companies while continuously working to reduce the emission of such substances. In addition to managing its GHG emissions, the Group is striving to control emissions of SOx and NOx from boilers and heating furnaces as well as soot and dust and PRTR substances from production lines.

We are committed to complying with relevant laws and national and municipal regulations and standards as well as upholding pollution control agreements with local authorities. Having installed wastewater treatment facilities, bag filters and other equipment to remove harmful substances, we are enforcing voluntary emission standards that are even more stringent than those mentioned above in the course of facility operations and maintenance.

Biodiversity

In recent years, the general public has voiced growing concerns with regard to environmental issues that significantly affect biodiversity. These issues range widely from the pollution of rivers and oceans, including the micro-plastic contamination of marine environments, and coral bleaching to the extinction of wildlife species and the equitable distribution of the benefits of biological genetic resources.

With the Convention on Biological Diversity coming into effect in 1993, a growing number of businesses are striving to help realize the United Nations SDGs and supporting other international initiatives related to biodiversity. With this in mind, Denka is constantly endeavoring to reduce environmental burdens attributable to its production activities by working in collaboration with the entities that comprise its supply chains. At the same time, the Company gives due consideration to the preservation of biodiversity and the natural environment when it is engaged in the construction of hydroelectric power generation facilities and the development of mines. Moreover, Denka is focusing on the sustainable use of resources throughout the course of the development and provision of its products and services. In addition, the Company provides environmental education on a regular basis to ensure that every Group employee is acutely aware of the significance of biodiversity. In these ways, we will step up corporate activities aimed at contributing to a sustainable society.

» Examples of concrete initiatives:

- ① Conducting periodic surveys aimed at assessing the impact of limestone mine development on ecosystems in neighboring areas
- ② Engaging in the planting of Japanese evergreen oak and pin oak trees to restore areas that have undergone mining to their original state
- ③ Preserving *Cephalanthera erecta* and *Cephalanthera falcata*, both of which are facing a growing threat of extinction and have been designated as class II endangered species by the Tokyo Metropolitan Government, on the premises of the Denka Innovation Center (Machida, Tokyo) and adjoining areas
- ④ Developing a water treatment business via Group company Denka Consultant & Engineering Co., Ltd. by employing its microorganism handling technologies



Cephalanthera erecta and *Cephalanthera falcata* preserved by the Denka Innovation Center



Prioritization of Safety

Basic Policy for Workplace Safety, Health, Security and Disaster Prevention

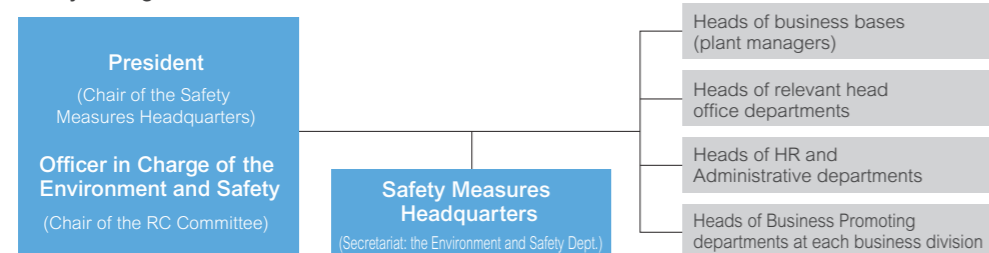
We put the utmost priority on worksite safety and health, facility security and disaster prevention in all aspects of our business activities.

To fulfill our social responsibilities as a chemical company, we put the utmost priority on safety as our basic stance for operations, thereby working together to create a lively and sound workplace and becoming a company capable of eliminating accidents and disasters and worthy of society's trust.

Chair of the Safety Measures Headquarters (President & CEO)

Safety Management Structure

Safety Management Structure Overview



Annual Safety Promotion Meeting
An annual one-day event aimed at promoting the inspection of and facilitating discussion about priority safety initiatives undertaken at each business site

Safety management conferences
Conferences aimed at identifying potential dangers related to explosion, fire and leakage posed by each manufacturing process and formulating countermeasures

Fiscal 2018 Initiatives

Companywide Targets	Priority Initiatives
<p>1 Reduce the number of major accidents and disasters to zero</p>	<p>Facilitate communication to create a lively and sound workplace while promoting safety assurance activities in which each worker is able to grasp the worth of their efforts</p> <p>1 Initiatives to reduce the number of major accidents and disasters to zero</p> <ul style="list-style-type: none"> Develop a system for identifying any signs of serious risks and mitigate intrinsic danger associated with our operations Thoroughly control residual risks after the implementation of countermeasures as well as newly emerging risks, with the aim of preventing disasters
<p>2 Continually improve the occupational safety record</p>	<p>2 Initiatives to continually improve the occupational safety record</p> <ul style="list-style-type: none"> Take full advantage of hazard prediction systems to spot workplace danger Create a workplace in which everyone is capable of conducting on-site hazard prediction activities before operations begin <p>3 Initiatives to ensure safety for everyone working at Denka business sites</p> <ul style="list-style-type: none"> Promote the exchange of courtesies (saying "Goanzen-ni!" or "Stay safe!"), encouraging the avoidance of unsafe behavior and discouraging others from engaging in such behavior Thoroughly practice the 3S—Seiri (sort), Seiton (set in order) and Seiso (shine) to facilitate efforts to identify workplace danger

Follow-Up Report on Initiatives Being Undertaken Since the Major Accident in March 2018

On March 3, 2018, a fatal accident occurred at the Omuta Plant due to the collapse of a bulk bag pile. In response, the plant implemented measures to prevent the recurrences of accidents of this kind by, for example, reviewing the allocation of cargo stored in warehouses and revising operational rules with the guidance of the labor standards inspection office. Building on these measures, in fiscal 2018 the plant set up racks at its warehouses while introducing an IoT-based operational safety management system. In short, the Omuta Plant is enhancing its safety measures from the aspects of operational rules, facilities and technologies.

Moreover, initiatives are now under way to upgrade risk assessment activities, in particular, enhancing the content of safety education provided by external specialists and improving risk diagnosis methods, with the involvement of all business units throughout the plant to identify and remove or reduce risk of major accidents. In addition, initiatives undertaken by the Omuta Plant are being rolled out at other production bases.

Initiatives to Mitigate Intrinsic Dangers Associated with Our Operations

» **“Prioritizing safety to help realize Denka Value Up and build a brighter future!”**

We are upgrading risk assessment activities to prevent facility-related accidents through the implementation of measures that address intrinsic dangers in accordance with the scale of each risk. To ensure that all facilities are equipped with proper safety measures, we also developed safety design standard documents that incorporate the latest safety standards, with the aim of mitigating intrinsic dangers associated with our operations. Moreover, we clearly set aside budgets for capital investment in safety measures, expending approximately ¥2 billion every year for this purpose to ensure that all necessary measures are implemented. In addition, initiatives to prevent accidents attributable to unintended human action include the following.

<p>Enhance training facilities that simulate dangerous situations</p> <p>Each business base ensures that all of their workers can undergo safety training employing such facilities</p>	<p>Introduce virtual reality (VR)-based accident simulator</p> <p>Let employees experience VR-based simulations of accidents in which they are pinned down or caught in machinery or fall from a high place</p>	<p>Confirm operator action via video recording</p> <p>Correct unsafe behavior that had been unnoticed by the operator himself via the verification of video-recording by multiple peers</p>
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Securing Transportation Safety

In fiscal 2018, our initiatives included safety patrols undertaken by staff from the logistics departments of Denka's Omi and Omuta plants. We also organized facility tours of other chemical manufacturer's production sites to gain new input from external perspectives. Furthermore, we invited our transportation subcontractors to take part in periodic drills in which they practice emergency responses to logistics accidents by employing the information on "yellow cards" as well as training sessions aimed at preventing oil leaks. This both raised their safety awareness and provided an opportunity to exchange opinions on logistics safety.

In fiscal 2019, we will continue to implement safety patrols in addition to reviewing our logistics operations to prevent logistics accidents and enhance our ability to take proper action at the occurrence of such accidents.



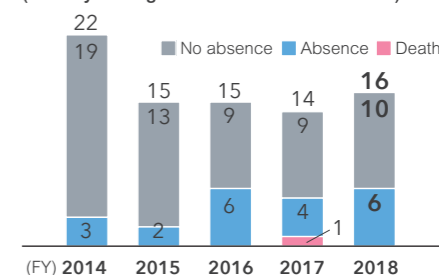
Production Process-Related Incidents and Occupational Accidents

Fiscal 2018 incidents related to our production process included three leaks and two fires. All these incidents were attributable to the loosening of pipe joints. In response, we stepped up daily inspections while carrying out the reinforcement of leak detection equipment and the review of in-house standards for handling leakage. None of these incidents involved human injury or environmental damage.

As a result, the number of incidents increased by two compared with fiscal 2017, with the number of accidents involving absence, including those attributable to heatstroke, failing to decrease.

Furthermore, the number of accidents involving construction workers has not decreased. We stepped up the practice of on-site patrols by safety staff to address this issue.

Total Number of Occupational Accidents (Directly managed sites and subcontractors)



TOPICS Initiatives to Reduce the Number of Occupational Accidents

<p>Trend in the number of accidents in which a worker is pinned down or caught by machinery</p> <p>Having upgraded our facilities to enhance safety measures, the number of such accidents decreased. Ongoing efforts are now under way to make further improvements.</p>	<p>Trend in the number of accidents in which a worker falls</p> <p>Despite a decrease in the number of accidents of this kind, we recognize the need to implement more robust measures to address the aging of workers and other changes in the working environment. We will therefore continue to upgrade our safety measures, including those aimed at correcting individuals' unsafe behavior.</p>
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Human Resource Development



Our Strategic Focus on Nurturing Human Resources with Specialized Skills

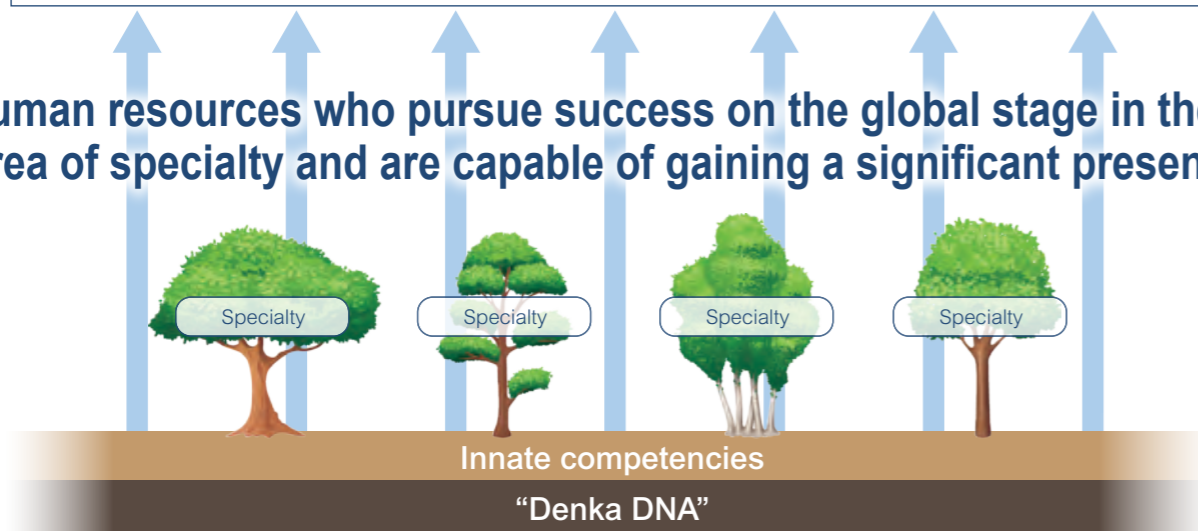
In line with its strategy aimed at promoting specialization, Denka has positioned human resources as an essential component that has to be specialized along with businesses, products and technologies. Accordingly, we are focused on nurturing human resources with specialized skills. To this end, we are helping employees take full advantage of their innate competencies while encouraging them to acquire unique skills.

In conjunction with the April 2018 launch of the Denka Value-Up management plan, we established the Career Value-Up Center, a dedicated body charged with human resource development under the HR Department. We are also providing the Specialty Human Resource Development Program, which consists of 200 types of training sessions, including job-level based training and specialist courses.

Through these initiatives, we are striving to develop human resources capable of gaining a significant presence on the global stage. In this way, we will achieve goals of Denka Value-Up and realize The Denka Value, our corporate philosophy.

Ideal Traits for Denka Employees — Human Resources with Specialized Skills

Human resources who pursue success on the global stage in their area of specialty and are capable of gaining a significant presence



TOPICS Our Employee Education Programs

As part of job-level based training, we provide younger employees with unique training programs, including a presentation of Denka's history, which dates back to 100 years ago and participation in volunteer activities in Minami Sanriku-cho to support ongoing efforts that began in 2011 to restore disaster-stricken communities. By doing so, we are helping them develop their mindset, skills, expertise, professional literacy and personality.

Meanwhile, specialist courses include workshops themed on how to realize innovation and create new value as well as training programs designed to help acquire marketing skills for creating unconventional businesses and those aimed at instilling methods for formulating business strategies. These programs are intended to nurture managerial candidates and help enhance their skills in their areas of specialty.



Denka staff taking part in volunteer activities in Minami Sanriku-cho as part of training programs for new recruits

Revision of the Personnel System (changes in job categories and evaluation system)

Having revised our conventional job categories, we reclassified specialists as "G-category" employees, with the idea of evoking such words as *general* and *global*. At the same time, we established "M-category," which takes its name from the word middle and collectively encompasses engineers and general staff, while removing clear distinctions between those in these two conventional categories so that individuals may take on a broader range of tasks. We also clarified the job roles employees in each category are expected to fulfill.

Furthermore, we revised our evaluation system, which constitutes the foundation of our personnel system, improving it from the perspective of transparency, fairness and persuasiveness. We also made it rule to provide appropriate feedback to employees to help them acquire insights into career development and better motivate them.

Conventional system

Specialists

Engineers

General staff

Revised system

G-category

M-category

Missions

Reforms

Spontaneous improvement

Evaluation system	Evaluation items	Fair evaluation	Appropriate feedback
<ul style="list-style-type: none"> Duties Competencies Performance 	<ul style="list-style-type: none"> Reforms, integration and accomplishments Mindset, skills, expertise, professional literacy and personality 	<ul style="list-style-type: none"> Provide evaluators with proper training Incorporate multifaceted perspectives 	<ul style="list-style-type: none"> Utilize a "feedback sheet" Help employees achieve future growth via evaluation

Promoting Diversity

Having established the Diversity Promotion Section in October 2017, we are developing a sound workplace environment in which every employee can stay healthy and work vibrantly under the slogan "Your value is Denka's value," with the aim of helping them realize their full potential.

In the first year of the Denka Value-Up management plan, we prepared an instruction video aimed at facilitating employee understanding of diversity. We also strove to help raise employee awareness of autonomous career development by, for example, providing training sessions for this purpose. Moreover, we incorporated the diversity perspective into the revised personnel system discussed above. In these ways, we endeavor to maximize motivation for all employees and enhance their sense of fulfillment while helping each individual achieve personal growth, believing that the success of Denka's pursuit of corporate growth hinges on them. As part of efforts to promote diversity, we will also execute operational process reforms, including the introduction of AI and IoT to standardize our operations and facility improvements aimed at reducing burdens on workers.

Status of Workforce Diversity (consolidated basis)	FY 2016	FY 2017	FY 2018
Number of employees	5,816	5,944	6,133
(Foreign nationals)	912	933	900
Regions			
Japan	4,859	4,978	5,206
Elsewhere in Asia	670	682	657
The Americas	257	256	239
Europe	30	28	31
Number of women in managerial positions (managers or above)	—	—	43

Note: Data on the number of women in managerial positions (managers or above; consolidated basis) had not been collected until fiscal 2018.



A cover of the DVD from the Diversity Promotion Section
Prepared an instruction video and distributed it to all workplaces.



A poster for the 2018 "Denka Relay"
Implemented a campaign aimed at facilitating intersectional collaboration

Helping Employees Strike Work-Life Balance



Opening the Health Insurance Society Web Portal

- We upgraded an in-house program aimed at subsidizing influenza vaccination expenses (expanding the scope of eligible persons to include all insured persons and resignees wishing to maintain their insured status as well as the dependent families of insured persons).
- Having enhanced our cancer checkup subsidy program, we have seen 20% growth in the number of female employees who undergo checkups aimed at detecting female-specific diseases.



Enhancing the Content of Annual Health Checkups

- To help prevent lifestyle-related diseases, we added the measurement of sd LDL-C to the list of optional items for annual employee health checkups (employees aged 40 or older are eligible to receive full subsidization for this option).



Introducing E-Pay Slip (full-time employees only)

Social Contribution Activities

Denka Group Social Contribution Policies

Denka aims to proactively play a positive role in society as a good corporate citizen. With this in mind, the Company hereby establishes its basic policies with regard to social contribution, clarifying the roles and responsibilities all Denka Group members must fulfill in terms of efforts to facilitate the sound and sustainable development of society.

Since its founding in 1915, the Denka Group has been pursuing the possibilities of chemical technologies. Through this pursuit, the Group has endeavored to fulfill its unchanging mission as a manufacturer in an effort to contribute to the advancement of human civilization and the development of society. For more than a century, the Group has accumulated strengths in such fields as the generation of clean energy and the development of energy-saving technologies. The Group also boasts an array of products, services and solutions capable of contributing to social development and environmental preservation. The Group is committed to fulfilling its social responsibilities by employing these strengths.

To this end, the Group will leverage its business network around the globe as a platform for social contribution. At the same time, the Group will focus on developing an environment that better encourages Group employees to take part in the following three initiatives while raising their social contribution awareness.

1 Educational, academic and cultural development

The Group will nurture young people, among whom the manufacturing industry's future leaders may be found, while proactively providing assistance to forward-looking academic pursuits and research activities. Simultaneously, the Group will contribute to cultural development.

2 Community contribution and the preservation of the global environment

Paying respect to diverse cultures and customs in countries around the world, the Group will take a community-rooted approach in its efforts to promote the sound development of local societies in which it operates. Moreover, the Group will voluntarily implement initiatives aimed at preserving the global environment while sparing no effort to enhance the efficiency of its use of limited resources, with the aim of contributing to the realization of a sustainable society.

3 Assistance to health promotion, contribution to people's well-being and facilitation of sports activities

The Group will facilitate sports activities, provide assistance to people's health promotion efforts and contribute to their well-being. By doing so, the Group will help improve people's quality of life in a way that leverages its core business functions associated with healthcare and the living environment.

Examples of Fiscal 2018 Initiatives

» Donation of Ebola Virus Rapid Diagnostic Test Kits to the Democratic Republic of Congo (DRC)

On May 25, 2018, Denka Seiken donated prototypes of Ebola virus rapid diagnostic test kits (QuickNaviTM series) to the DRC. These test kits were co-developed by Denka Seiken and Professor Ayato Takada (Hokkaido University's Division of Global Epidemiology, Research Center for Zoonosis Control) and are capable of confirming Ebola infection within approximately 15 minutes without using any specific medical facilities. Therefore, these test kits can be used by healthcare practitioners operating in regions with poor medical infrastructure. Looking ahead, we will promote solutions aimed at delivering the early diagnosis of infectious diseases and preventing pandemics.

» Holding the DENKA BIG SWAN Junior Soccer Festival

On August 19, 2018, we held the fourth round of the DENKA BIG SWAN Junior Soccer Festival at DENKA BIG SWAN STADIUM (former Niigata Stadium; renamed upon the acquisition of naming rights by Denka) in collaboration with Itoigawa City's Board of Education, Sports Association and Soccer Association. With the attendance of approximately 400 people, including children who are members of local junior soccer teams and their parents from regions across Niigata Prefecture, we organized exchange games as well as a soccer clinic by players from ALBIREX NIIGATA, a professional soccer team listed in the J2 League. Going forward, we will take advantage of DENKA BIG SWAN STADIUM as a venue for assisting in the development of regional communities and the promotion of sports activities.



Opening ceremony

Quality Management

The Denka Group's Fiscal 2019 Quality Policy

To achieve the goals of the Denka Value-Up management plan, all employees must maintain acute quality awareness and strictly comply with quality, safety and other standards while engaging in ongoing quality improvement activities, with the aim of delivering products and services that live up to the trust placed in them by customers and society as a whole.

Our Concepts behind the Quality Policy

The Denka Group handles a broad range of operations, including various organic and inorganic materials, electronic materials and pharmaceuticals. In line with the quality policy aimed at supporting the implementation of the management plan, we have placed the greatest emphasis on delivering products and services that live up to customer trust. To this end, we are engaging in quality assurance activities by giving due consideration to customer requirements in each business field and the latest conditions in the social environment.

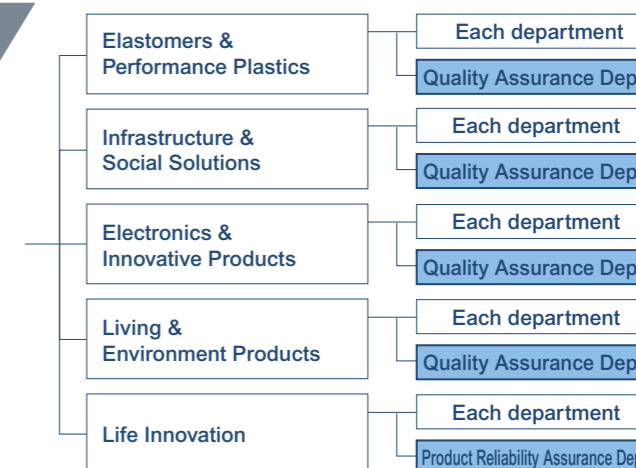
Our Approach to Chemical Substance Management

Based on in-house guidelines for the management of chemical substances used in our products, we are properly managing substances that are potentially hazardous to human health and the environment in accordance with relevant legal regulations and industry standards. In particular, we confirm with suppliers the content of legally regulated substances before adopting a new raw material. We also inform users of the content of regulated chemical substances in our products, including molded products, by issuing safety data sheets (SDS) and employing the chemSHERPA scheme designed to communicate chemical substance content information.

Quality Management System

» Establishing Quality Assurance Departments at Each Business Division

With the aim of enhancing the Denka Group's quality assurance systems, in April 2019 we established Quality Assurance departments directly managed by heads of the Elastomers & Performance Plastics, Infrastructure & Social Solutions and Living & Environment Products divisions. Equipping these three divisions with functions equivalent to similar existing departments in the Electronics & Innovative Products and Life Innovation divisions, this move is expected to help us develop a structure capable of accommodating customer requests in an accurate and timely manner and better position Denka to deliver products that live up to customer trust.



» Status of ISO and Other Quality Management Certification

Denka and its key subsidiaries have maintained the ISO 9001 and other quality management system certification for their mainstay products to continuously improve quality management. Although ISO 9001 standards and ISO13485 medical device quality management system standards underwent revisions in 2015 and 2016, respectively, we completed updating our quality management systems in accordance with the revised standards.

Quality Education

We provide new recruits with basic education on quality management while upgrading their knowledge via intermediate quality management education. Moreover, we provide various training sessions designed to meet the needs of employees in each job level and based on products they handle. Specifically, these training sessions address quality-related laws, regulations and rules, statistical quality management methods, reliability and quality function deployment methods, quality management system operations and other relevant topics, with the aid of external specialist organizations. In these ways, we are helping employees raise their quality assurance awareness and acquire quality management techniques.



Consolidated Financial Statements

Denka's 11 Year-Financial Summary

	Fiscal 2008	Fiscal 2009	Fiscal 2010	Fiscal 2011	Fiscal 2012	Fiscal 2013	Fiscal 2014	Fiscal 2015	Fiscal 2016	Fiscal 2017	Fiscal 2018
Summary Statement of Income (Millions of yen)											
Net sales	334,130	323,875	357,893	364,712	341,645	376,809	383,978	369,853	362,647	395,629	413,128
Operating income	10,302	21,655	24,618	20,713	18,817	21,230	24,047	30,634	25,844	33,652	34,228
Ordinary profit	3,094	16,888	23,052	18,996	17,824	20,604	24,287	27,022	23,158	31,499	32,811
Profit attributable to owners of parent	1,439	10,474	14,355	11,330	11,255	13,573	19,021	19,472	18,145	23,035	25,046
Equity in earnings (losses) of affiliates	314	223	1,189	966	530	550	950	1,097	568	1,105	1,384
Financial Position (Millions of yen)											
Current assets	122,862	138,360	143,352	153,637	158,595	164,747	170,497	161,876	168,902	184,129	190,730
Total assets	377,912	400,407	402,046	402,552	415,356	431,347	445,569	443,864	454,944	473,799	483,827
Current liabilities	137,034	150,689	153,410	160,676	170,752	163,645	160,101	147,537	144,190	158,043	154,047
Net assets	150,142	160,316	168,182	172,737	180,709	189,516	210,798	216,071	227,487	242,780	250,481
Interest-bearing debt	135,764	120,576	114,562	118,049	114,241	120,669	122,536	124,596	113,748	108,269	112,134
Cash Flows (Millions of yen)											
Cash flows from operating activities	5,794	46,418	33,780	28,521	40,215	27,245	35,557	44,014	39,557	48,776	32,660
Cash flows from investing activities	(33,876)	(28,377)	(23,763)	(22,363)	(25,864)	(26,693)	(27,449)	(34,979)	(22,258)	(29,298)	(26,176)
Cash flows from financing activities	31,096	(17,262)	(10,554)	(4,050)	(12,784)	(3,327)	(7,437)	(7,348)	(19,319)	(15,858)	(8,408)
Cash and cash equivalents at end of year	6,077	6,815	6,160	8,207	10,680	8,244	9,157	11,813	10,174	14,101	13,889
Per share information (Yen)											
Profit per share	14.44	106.67	146.20	116.11	118.13	145.16	207.40	214.71	205.05	261.80	286.18
Net assets per share	1,503.01	1,607.32	1,686.73	1,768.20	1,884.96	2,013.84	2,279.70	2,366.74	2,526.42	2,727.94	2,839.16
Financial Indices (%)											
Operating income ratio	3.1	6.7	6.9	5.7	5.5	5.6	6.3	8.3	7.1	8.5	8.3
ROE	1.0	6.9	8.9	6.7	6.4	7.4	9.6	9.3	8.3	10.0	10.3
ROA	0.8	4.3	5.8	4.7	4.4	4.9	5.5	6.1	5.2	6.8	6.9
Shareholders' equity ratio	39.1	39.4	41.2	42.3	43.1	43.5	46.9	47.7	49.1	50.5	51.0
Other											
Capital investment (millions of yen)	34,996	26,928	21,325	22,878	26,964	25,735	21,300	21,196	25,731	22,710	32,745
Depreciation and amortization (millions of yen)	19,390	20,932	22,292	23,192	21,585	22,254	23,032	23,242	24,359	24,599	22,946
R&D expenses (millions of yen)	10,285	9,615	9,819	10,639	10,605	10,828	11,127	11,787	13,026	13,868	14,562
Number of employees at end of year	4,783	4,742	4,768	4,921	5,206	5,249	5,309	5,788	5,816	5,944	6,133

Note: Figures for fiscal 2017 and later are modified in accordance with the Partial Amendments to Accounting Standard for Tax Effect Accounting (Accounting Standards Board of Japan (ASBJ) Statement No. 28 issued in February 2018).

Consolidated Balance Sheets

(Millions of yen)

Assets	Fiscal 2017	Fiscal 2018	Liabilities	Fiscal 2017	Fiscal 2018
Current assets	184,129	190,730	Current liabilities	158,043	154,047
Cash and deposits	14,115	13,902	Notes and accounts payable—trade	53,625	52,924
Notes and accounts receivable—trade	95,583	95,780	Short-term loans payable	41,100	43,101
Merchandise and finished goods	43,761	47,455	Commercial paper	-	2,000
Work in process	3,669	4,389	Current portion of long-term loans payable	634	5,062
Raw materials and supplies	18,870	19,911	Current portion of bonds	15,000	5,000
Other	8,595	9,802	Accounts payable—other	14,677	18,504
Allowance for doubtful accounts	(466)	(511)	Income taxes payable	5,855	3,010
			Accrued consumption taxes	1,081	487
			Accrued expenses	10,746	10,881
			Provision for bonuses	3,002	3,122
			Other	12,321	9,953
Noncurrent assets	289,670	293,097	Noncurrent liabilities	72,975	79,298
Property, plant and equipment	209,761	218,677	Bonds payable	12,000	22,000
Buildings	39,424	40,497	Long-term loans payable	39,535	34,969
Structures	22,111	21,895	Deferred tax liabilities	5,318	4,961
Machinery and equipment	66,947	70,359	Deferred tax liabilities for land revaluation	8,403	8,403
Vehicles	488	796	Net defined benefit liability	6,002	7,269
Tools, furniture and fixtures	3,249	3,820	Provision for stock benefits	18	44
Land	63,323	63,366	Other	1,696	1,650
Lease assets	248	307	Total liabilities	231,019	233,346
Construction in progress	13,968	17,634			
			Net assets		
Intangible assets	13,880	12,415	Shareholders' equity	212,479	225,498
Software	1,148	978	Capital stock	36,998	36,998
Goodwill	9,315	8,312	Capital surplus	49,391	49,353
Right of using patent	3,417	3,124	Retained earnings	129,278	144,638
			Treasury stock	(3,189)	(5,492)
Investments and other assets	66,027	62,004	Accumulated other comprehensive income	26,584	21,362
Investment securities	58,178	55,028	Valuation difference on available-for-sale securities	17,448	15,182
Long-term loans receivable	552	236	Deferred gains or losses on hedges	(195)	(345)
Long-term prepaid expenses	2,122	1,699	Revaluation reserve for land	10,260	10,260
Deferred tax assets	2,534	2,736	Foreign currency translation adjustment	1,241	(120)
Other	2,779	2,422	Remeasurements of defined benefit plans	(2,170)	(3,614)
Allowance for doubtful accounts	(139)	(118)	Non-controlling interests	3,717	3,620
Total assets	473,799	483,827	Total net assets	242,780	250,481
			Total	473,799	483,827

Changes in Disclosure Methods

At the beginning of fiscal 2018, Denka adopted "Partial Amendments to Accounting Standard for Tax Effect Accounting" (ASBJ Statement No. 28, dated February 16, 2018). In line with this standard, the Company revised relevant disclosure methods, with deferred tax assets being classified under investments and other assets, and deferred tax liabilities being classified under noncurrent liabilities.

The adoption of these amendments resulted in changes in consolidated balance sheet items for the previous fiscal year, namely, a ¥2,338 million decrease in deferred tax assets classified under current assets, a ¥1,052 million increase in deferred tax assets classified under investments and other assets and a ¥1,286 million decrease in deferred tax liabilities classified under noncurrent liabilities.

Moreover, Denka has offset its deferred tax assets and liabilities as a single taxable entity. This resulted in a ¥1,286 million decrease in total assets as of March 31, 2018.

Consolidated Statements of Income

(Millions of yen)

	Fiscal 2017 (From April 1, 2017 to March 31, 2018)		Fiscal 2018 (From April 1, 2018 to March 31, 2019)	
Net sales		395,629		413,128
Cost of sales		295,583		310,839
Gross profit		100,046		102,289
Selling, general, and administrative expenses		66,394		68,060
Operating income		33,652		34,228
Non-operating income				
Interest and dividend income	1,681		2,313	
Equity in earnings of affiliates	1,105		1,384	
Other	702	3,488	495	4,193
Non-operating expenses				
Interest expenses	707		762	
Other	4,933	5,641	4,849	5,611
Ordinary income		31,499		32,811
Extraordinary income				
Loss on sales of investment securities	-	-	689	689
Extraordinary loss				
Loss on liquidation of business	1,928		389	
Loss on disaster		1,928	718	1,108
Income before income taxes		29,571		32,392
Income taxes—current	7,280		6,480	
Income taxes—deferred	(933)	6,347	978	7,459
Profit		23,224		24,933
Profit (loss) attributable to non-controlling interests		188		(112)
Profit attributable to owners of parent		23,035		25,046

Consolidated Statement of Changes in Net Assets

From April 1, 2018 to March 31, 2019 (Millions of yen)

	Shareholders' equity				
	Capital stock	Capital surplus	Retained earnings	Treasury stock	Total shareholders' equity
Balance at beginning of the fiscal year	36,998	49,391	129,278	(3,189)	212,479
Changes of items during the fiscal year					
Dividends from surplus			(10,082)		(10,082)
Profit attributable to owners of parent			25,046		25,046
Change of scope of consolidation			396		396
Change in ownership interest of parent due to transactions with non-controlling interests		(43)			(43)
Purchase of treasury stock				(2,311)	(2,311)
Disposal of treasury stock		5		9	15
Net changes of items other than shareholders' equity					
Total changes of items during the fiscal year		(37)	15,359	(2,302)	13,019
Balance at end of the fiscal year	36,998	49,353	144,638	(5,492)	225,498

From April 1, 2018 to March 31, 2019 (Millions of yen)

	Accumulated other comprehensive income							
	Valuation difference on available-for-sale securities	Deferred gains or losses on hedges	Revaluation reserve for land	Foreign currency translation adjustment	Remeasurements of defined benefit plans	Total valuation and translation adjustments	Non-controlling interests	Total net assets
Balance at beginning of the fiscal year	17,448	(195)	10,260	1,241	(2,170)	26,584	3,717	242,780
Changes of items during the fiscal year								
Dividends from surplus								(10,082)
Quarterly profit attributable to owners of parent								25,046
Change of scope of consolidation								396
Change in ownership interest of parent due to transactions with non-controlling interests								(43)
Purchase of treasury stock								(2,311)
Disposal of treasury stock								15
Net changes of items other than shareholders' equity	(2,265)	(149)		(1,362)	(1,443)	(5,221)	(96)	(5,318)
Total changes of items during the fiscal year	(2,265)	(149)		(1,362)	(1,443)	(5,221)	(96)	7,701
Balance at end of the fiscal year	15,182	(345)	10,260	(120)	(3,614)	21,362	3,620	250,481

Consolidated Statements of Cash Flows

(Millions of yen)

	Fiscal 2017 <small>(From April 1, 2017 to March 31, 2018)</small>	Fiscal 2018 <small>(From April 1, 2018 to March 31, 2019)</small>
Cash flows from operating activities		
Income before income taxes	29,571	32,392
Depreciation	23,860	22,434
Amortization of goodwill	738	511
Increase (decrease) in provision for bonuses	120	123
Increase (decrease) in net defined benefit liabilities	(722)	(814)
Increase (decrease) in allowance for doubtful accounts	(680)	28
Interest and dividend income	(1,681)	(2,313)
Interest expenses	707	762
(Gains) losses on equity in affiliates	(1,105)	(1,384)
(Gains) losses on valuation of investment securities	394	211
(Gains) losses on sales of investments in securities	(79)	(689)
(Gains) losses on sales and disposals of property, plant and equipment	176	412
Losses on business restructuring	1,928	389
(Increase) decrease in notes and accounts receivable	(10,485)	(3,036)
(Increase) decrease in inventories	(3,424)	(5,501)
Increase (decrease) in notes and accounts payable	8,010	(2,132)
Other	5,175	(1,674)
Subtotal	52,504	39,720
Interest and dividends received	2,068	3,128
Interest paid	(633)	(767)
Income taxes (paid) refunded	(5,163)	(9,420)
Net cash provided by (used in) operating activities	48,776	32,660
Cash flows from investing activities		
Purchases of property, plant and equipment	(24,981)	(27,273)
Proceeds from sale of property, plant and equipment	7	50
Purchase of intangible assets	(388)	(185)
Purchase of investment securities	(34)	(58)
Proceeds from sale of investment securities	166	946
Purchase of investments in subsidiaries	(4,296)	—
Other	228	342
Net cash provided by (used in) investing activities	(29,298)	(26,176)
Cash flows from financing activities		
Increase (decrease) in short-term loans payable	(2,206)	4,148
Proceeds from long-term loans payable	—	496
Repayment of long-term loans payable	(86)	(616)
Cash dividends paid by the Company	(7,481)	(10,082)
Proceeds from issuance of bonds	7,000	15,000
Payment for redemption of bonds	(10,000)	(15,000)
Cash dividends paid to non-controlling interests	(25)	(44)
Payment for purchase of treasury stock	(3,053)	(2,311)
Other	(4)	2
Net cash provided by (used in) financing activities	(15,858)	(8,408)
Effect of exchange rate changes on cash and cash equivalents	57	(252)
Net increase (decrease) in cash and cash equivalents	3,676	(2,176)
Cash and cash equivalents at beginning of year	10,174	14,101
Increase (decrease) in cash and cash equivalents from newly consolidated subsidiaries	250	1,964
Cash and cash equivalents at end of year	14,101	13,889

Corporate Information

Company Overview

Name	Denka Company Limited
Head Office	Nihonbashi Mitsui Tower, 1-1, Nihonbashi-Muromachi 2-chome, Chuo-ku, Tokyo 103-8338, JAPAN TEL: +81-3-5290-5055 FAX: +81-3-5290-5059
Established	May 1, 1915
Paid-in Capital	¥36,998 million (as of March 31, 2019)
Main business	<ul style="list-style-type: none"> •Elastomers & Performance Plastics (Chloroprene rubber, styrene-based synthetic resins, styrene monomer and acetyl chemicals) •Infrastructure & Social Solutions (Cement, special cement additives for concrete, fertilizers and inorganic materials as well as polymer processing products for civil engineering and agriculture use) •Electronics & Innovative Products (Electronic packaging materials, functional ceramics, electronic circuit substrates, thermal materials, adhesives, acetylene black, etc.) •Living & Environment Products (Polymer processing products for construction and industrial use, food packaging materials, etc.) •Life Innovation (Pharmaceutical products, etc.)
Employees	6,133 (consolidated basis); 3,250 (non-consolidated basis) (as of March 31, 2019)

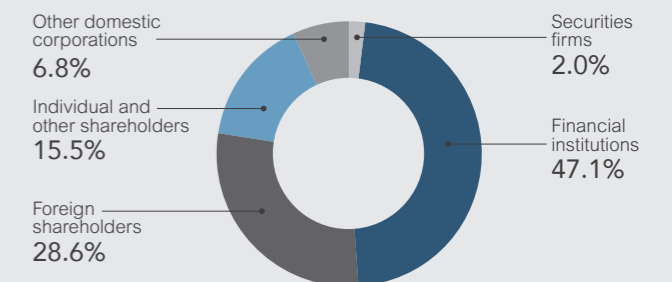
Stock Information

(as of March 31, 2019)

Shareholder name	Number of shares held (thousand shares)	Percentage of shares held (%)
The Master Trust Bank of Japan, Ltd. (Trust Account)	103,461	11.89
Japan Trustee Service Bank, Ltd. (Trust Account)	78,104	8.98
Trust & Custody Services Bank, Ltd. (Mizuho Corporate Bank, Ltd. Retirement Benefit Trust Account re-entrusted by Mizuho Trust & Banking Co., Ltd.)	32,158	3.70
National Mutual Insurance Federation of Agricultural Cooperatives	29,007	3.33
MITSUI LIFE INSURANCE COMPANY LIMITED	23,816	2.74
STATE STREET BANK AND TRUST COMPANY 505001	17,050	1.96
Japan Trustee Service Bank, Ltd. (Trust Account 5)	15,092	1.74
Mitsui Sumitomo Insurance Company, Limited	13,832	1.59
SSBTC CLIENT OMNIBUS ACCOUNT	13,819	1.59
JP MORGAN CHASE BANK 385151	13,766	1.58

Note: Percentage of shares held is calculated after excluding treasury stock.

Composition of shareholders by category



Global Network (as of March 31, 2019)

