Nitto Group's R&D Strategy as per the Chief Technology Officer

Yosuke Miki
Director, Senior Executive Vice President, CTO
General Manager of Corporate Technology Sector

ESG at the Core of R&D Activities

Involve Players throughout the Entire Supply Chain to Solve Social Issues

The past several years have seen drastic changes in the circumstances surrounding our R&D activities. Presumably because the Nitto Group has made it clear to place ESG at the core of our management, a number of customers and our partners in the supply chain are inviting us to "proactively address social issues together" or asking us to "lead them all as the leader of the supply chain." Needless to say, no one company can hope to accomplish this major task of resolving social issues on their own. Take our efforts to reduce CO_2 emissions as an example. Such an undertaking, taken unilaterally, does not yield a real solution. However, by working with our partners throughout the supply chain, we can share the additional burden of this important task and cooperate with each other to move forward. Nitto is expected to take the lead role in this joint effort and everyone in our R&D team is feeling a tremendous amount of responsibility for this expectation, which has been a strong catalyst toward accelerating our activities in line with this brand new policy.

We at the Nitto Group consider initiatives for ESG not as a cost, but rather as an investment in unfinancial value. In other words, we are determined to convert this investment into financial value, that is to say, earnings, down the road. We also gave shape to social contributions that the Nitto Group should be pursuing in fiscal 2021 by putting "PlanetFlags/HumanFlags" on products contributing to the environment and/or human life. Going forward, we intend to disseminate this approach of ours widely across the world and share it throughout the supply chain. We hope to see many more players in the supply chain endorse our values, so that we can involve everyone in the supply chain in tackling social issues, thus enhancing our corporate value.

The Nitto Group has long been "customer-oriented" in its endeavors, excelling at building a close relationship with customers and different partners throughout the supply chain. Now is the time to tap into this intangible asset.

R&D Expected to Help Foster Corporate Culture and Develop Human Resources

Traditionally, R&D's primary role has been to build a technological platform and to give rise to new products and businesses. Now that we have announced our commitment to ESG management, however, we believe that enhancing unfinancial value in the realm of technology is also an important role for R&D. What this means is that R&D is expected to foster a corporate culture where ESG has been incorporated into everything that our company does and everything that our employees talk about with regards to Nitto Group's contributions to the environment and human life and to develop individuals who take ownership of ESG and undertake the initiative in leading viable projects. This being the case, the R&D team is focusing on the establishment of a scheme that converts investments from unfinancial value to financial value.

One good example of our endeavors in this regard is Technology *Kuruma-za*, which is an avenue for cross-sectional communications first convened in 2017 where several dozen people, including heads of R&D divisions and development managers of business execution bodies, meet once a month to discuss what technologies Nitto will need and how we should go about pursuing these development projects from the perspective of the entire Group. From fiscal 2020, its operation was improved in order to enhance effectiveness: several teams of 4-5 are invited to have a three-month-long intensive discussion. As if anticipating the direction that the Group would choose to pursue later, ESG was among the topics for their discussion by the middle of fiscal 2020. More specifically, they had in-depth discussions from two different approaches, namely, a "defensive" approach of identifying technological issues that need to be addressed if Nitto is to achieve its CO_2 emissions reduction target in order to update existing businesses and an "offensive" approach of searching for project themes where we help customers to improve upon their environmental KPIs and receive profit in exchange for our services. Frankly, I had expected a change in awareness from a short-term perspective that focuses on earnings to a longer-term focus on ESG that envisages future returns would take longer. To my great delight, however, every technology executive began thinking seriously about ESG as their own business and offering many suggestions and comments much earlier than I had expected. Nitto is often hailed by others for its quick action once a decision is made, and I think this is also part of Nitto's unique corporate culture. In the case of ESG, too, we have had good responses earlier than expected, which is encouraging indeed.

This realization led us to devise a policy of "preferentially allocating resources on projects for candidates of products with either PlanetFlags or HumanFlags," which we hope will instill ESG awareness in all members of our R&D team. Some seemed puzzled with this new direction, but soon many projects underwent a sweeping review and now most of the projects, except those in their infancy and which therefore have yet to be classified, are geared toward developing one with PlanetFlags or HumanFlags.

With this new program, we hope to generate earnings out of the initiatives intended to enhance the unfinancial value of fostering corporate culture and developing individuals who would assume the job. Already, I have got a strong sense that we can convert unfinancial value into financial value sooner rather than later, if we act quickly just as we have done.

To Accelerate the Commercialization Process of "0→1→10→100"

Managing Development Projects with Different Criteria for Different Stages

To constantly create a business that contributes to earnings, it is important to clearly show which stage of commercialization the numerous development projects are in so that we can take action accordingly. To make things easy to understand, we came up with a development flow in four stages, namely, "0 (idea) → 1 (project launch) → 10 (productization) → 100 (commercialization)." In this process, R&D is primarily responsible for those in the stages from "0" to "10," and we subdivide the process from "1" to "10" into the "early stage" and the "later stage," to which different criteria are applied to manage projects.

In the early stage, we determine if a project offers continuity and relevance with respect to Nitto's technological assets to see if it might help to expand our technology platform. The technology platforms thus created contain important unfinancial value for Nitto to maintain its competitive edge. As such, how we can boost a project's unfinancial value takes precedence over a project's profitability in this stage.

Conversely, in the later stage, we conduct trials for commercialization in order to convert unfinancial value into financial value. While quantitatively assessing cumulative investments for each project and the value that the project may create once it reaches the market, we make it a rule to make quick decisions. This approach is also true for projects geared toward social contributions. In order to balance how much we input and how much return we can expect, we take different actions for each project, though the timeline may differ from one project to another.

We also introduced a system for monitoring scores for products with PlanetFlags or HumanFlags halfway through each stage. By ensuring that we have a picture of how the project will evolve from the earliest steps in the process, we aim to maximize the social contributions it will make in the future.

Expediting Open Innovation As We Carefully Determine Synergy

We are actively engaging in open innovation in order to accelerate the "0→1→10→100" commercialization process.

In addition to its global R&D center, the Nitto Group has established bases to conduct research about the markets and technological trends in respective geographic regions. These bases are also given the task of gathering information on universities and other educational institutions and venture companies with unique technology in their respective regions. We make the most of such information to find partners for open innovation. For instance, in China, where the government's policies can affect the market significantly, we conduct surveys on educational institutions that are closely related to such policies, whereas in the U.S., where one venture company after another pops up in the life science and advanced device fields, we sponsor incubators that support such venture companies to monitor the latest movements in real time. In fiscal 2022, we began preparations for establishing a new research base in Europe, the epicenter for environmental rule-making, with a view toward accelerating open innovation for ESG projects to keep us updated on the latest environmental regulations.

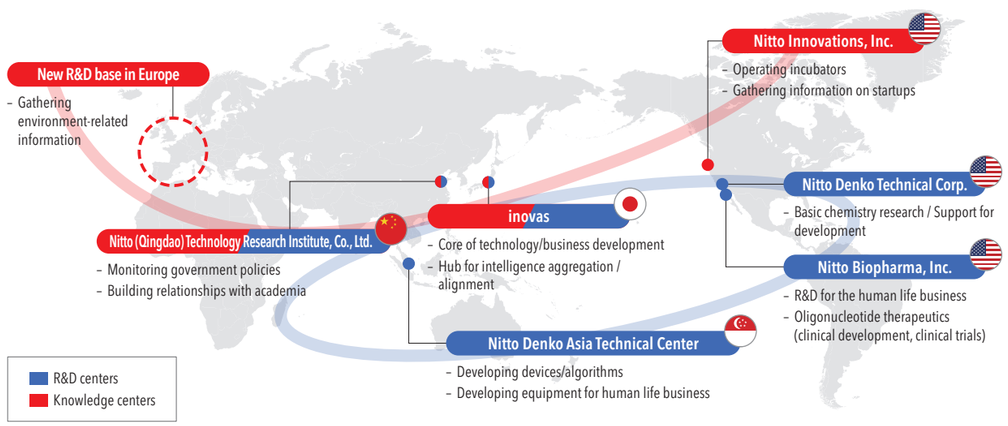
Before we sign a partnership, we carefully determine if the candidate partner's technology aligns with Nitto's technology platforms or if it might be a missing piece for Nitto's commercialization process. Even if the candidate passes this test, we do not try assimilating their technology on Day One. Rather, we invite them to conduct joint research for a certain period by excluding competitors as much as possible, to carefully verify the integrity of their technology and alignment with ours. Only when we have a really good sense of a fruitful partnership, will we participate in their management by investing in part of the business. As we forge ahead with the partnership and share management resources, we speed up the development process.

When you seek a partner for open innovation, it is crucial "not to miss an opportunity," because potential partners might change their mind. To seize an opportunity that presents itself without fail, we set up a scheme called "management fund," which uses a different set of criteria from those used for ordinary decisions to flexibly provide funds up to a certain amount with approval from the CTO. The combination of two seemingly opposing approaches of the most careful determination and speedy decision-making, I believe, allows us to form a partnership in a way that only Nitto can.

One model case of open innovation using management funds is a CO_2 separation membrane module currently under development. Technologies for separation membranes and spiral modules that use such membranes have borne fruit as commercial membranes for seawater desalination and form one of Nitto Group's technology platforms. We began by applying technology for our seawater desalination membranes to gas separation, but, in pursuit of greater speed, we decided to opt for open innovation with educational institutions from around the world to achieve high CO_2 separation performance in a short period. Currently, we are conducting various verification tests for productization of the technology. In relation to this, we are also pursuing open innovation for the technology of converting separated CO_2 into valuables, as if to put a missing piece in the puzzle of commercialization.

Rapid movements after targets have been set represent the Nitto Group's real worth. By utilizing management funds to explore open innovation, we intend to further accelerate the unique commercialization process of "0→1→10→100."

Network of R&D / Knowledge Centers Addressing Specific Needs in Each Region



Creating Value out of Intangible Assets

Along with R&D activities for products with PlanetFlags or HumanFlags, Nitto's R&D team has been intent on expanding earnings by utilizing intangible assets, for several years.

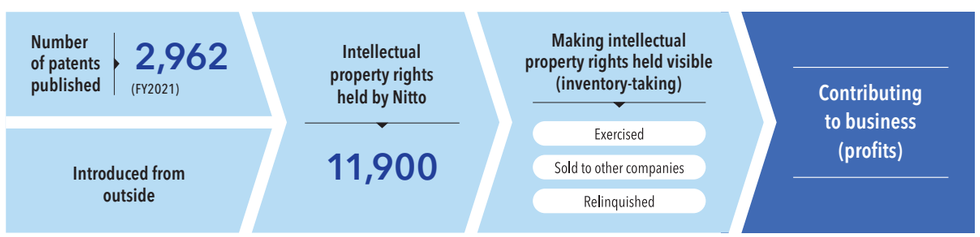
For patents, manufacturing know-how, and other forms of intellectual property, we are taking systematic and strategic approaches from two perspectives of the "patent application strategy" and the "owned patent utilization strategy."

As for patent application, we've set our sights on three types of patents: those that create an entry barrier for competing technologies, which should give us an edge over competitors, after making detailed research and analysis of such technologies; those that protect Nitto's business by establishing rights to the core of Nitto's business administration; and those that are found to be of any use following an investigation of the market/customer needs and trends, although Nitto may not commercialize them in future.

The strategy of utilizing owned patents is about monetizing patents that we already own. While giving due regards to four possibilities of "utilizing patents for Nitto's operations to generate earnings," "gaining license revenue through the exercising of rights," "receiving revenues by transferring patents," and "reducing costs by abandoning unnecessary patents," we are making the most of our intellectual property to increase the Group's earnings.

With the management's new policy of "placing ESG at the core of our management," the Nitto Group has come to a major crossroads. We are working hard to address the challenging mission of developing a series of products and businesses that we hope will contribute to the solution of social issues, while at the same time achieving economic rationality. As I have described thus far, I have received positive responses regarding several of our initiatives. I would be most delighted if we can achieve our goals and make Nitto an attractive company that makes those in younger generations yearn for an R&D position at the Nitto Group.

Making Intellectual Property Rights Visible



Business Strategies by Segment and their Progress

Summary of overall business

In the economic environment during this fiscal year, progress was made in balancing preventive measures and economic activities due to the proliferation of vaccines and economic support measures in various countries in response to the emergence of a series of mutant strains of novel coronavirus (COVID-19), and the economy continued to recover. Moreover, the trend toward electronification and digitalization has gained momentum in all fields, and new ways of working–such as teleworking–have taken root. On the other hand, uncertainty increasingly pervades the global economy, as evidenced by the recent surge in raw material prices and supply chain disruptions caused by Russia's invasion of Ukraine, as well as the rapid weakening of the yen.

Under these circumstances, in the Group's main markets, there was growth in sales of high-precision substrates for smartphones and optical films for OLED displays as well as assembly parts. Sales of semiconductor-related materials and optical films used in laptop computers and tablets remained strong, while automotive products and those related to general industry recovered from the impact of COVID-19. In the nucleic acid drug market, the development of COVID-19 vaccines is progressing at a rapid pace, driving higher demand for contract manufacturing and related materials in the Nitto Group.

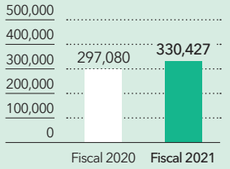
In responding to COVID-19, the Nitto Group prioritized the health and safety of every person and worked on preventing the spread of infections while endeavoring to ensure the continued supply to our customers. We will continue to do our utmost to ensure that there are no interruptions in the provision of products and services to our customers.

As a result of the above, revenue increased by 12.1% from the previous fiscal year (changes hereafter are given in comparison with the previous fiscal term) to 853,448 million yen. Operating income increased by 41.0% to 132,260 million yen, income before income taxes rose by 41.9% to 132,378 million yen, and net income grew by 38.3% to 97,234 million yen. Net income attributable to owners of the parent company rose by 38.3% to 97,132 million yen.

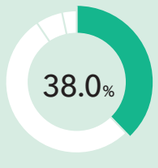
Industrial Tape

Revenue **330,427** million yen

Revenue transition (yen in millions)



Composition of revenue



Operating income **39,283** million yen

Operating results

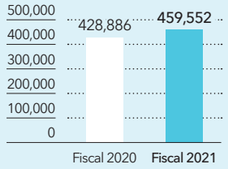
For Functional Base Products, sales increased from the previous fiscal year. As new work styles such as teleworking became firmly established, demands for ceramic condensers and semiconductors used for electronic devices such as tablet devices and servers increased, and thus demands for related materials used in their manufacturing process also increased. In addition, demand for assembly materials grew with the growth in production of high-end smartphones. Automobile materials, general industry materials, and protective materials for metal plates recovered from the impact of COVID-19 in the previous fiscal year. On the other hand, the Group was affected by rising raw material and transportation costs due to factors such as rising crude oil prices.

As a result of the above, revenue rose by 11.2% to 330,427 million yen and operating income increased by 43.8% to 39,283 million yen.

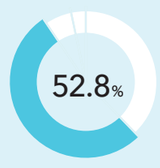
Optronics

Revenue **459,552** million yen

Revenue transition (yen in millions)



Composition of revenue



Operating income **96,599** million yen

Operating results

In Information Fine Materials, revenue did not reach the level of the previous fiscal year. The demands of products used for TV, optical films for LCD and ITO films decreased. On the other hand, the demands of optical films for laptops and tablet devices and optical films for OLED smartphones increased. In addition, for products used for TVs, the Group received royalty payment under the licensing agreements with our business partners in the 1st quarter of the fiscal year.

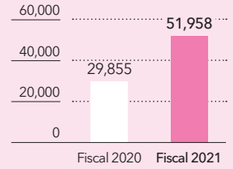
Sales of Flexible Printed Circuits increased from the previous fiscal year. Demand for circuit materials of CIS (Circuit Integrated Suspension) increased with an increase in manufacturing of hard disk drives (HDDs) used in data centers with high capacities, and we have increased our production capacity to meet the growing demand and carry out the supply responsibilities. The number of models adopting the high-precision circuits for high-end smartphones has expanded from the previous fiscal year, that contributed significantly to the business performance.

As a result of the above, revenue rose by 7.2% to 459,552 million yen and operating income increased by 19.7% to 96,599 million yen.

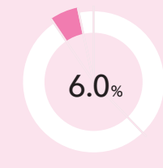
Life Science

Revenue **51,958** million yen

Revenue transition (yen in millions)



Composition of revenue



Operating income **9,790** million yen

Operating results

Sale of Medical Products increased from the previous fiscal year. Amid a global shortage of COVID-19 vaccines, the development of new vaccines is accelerating, and the Group has begun supplying immunologic adjuvants for COVID-19 vaccines in oligonucleotide contract manufacturing business and added new manufacturing lines. Demand of polymer beads for nucleic acid synthesis (NittoPhase™) also increased in the growing market of nucleic acid drugs. Demand for surgical tapes was recovering at a slow pace from the impact of COVID-19.

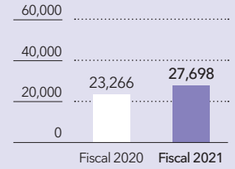
In development of nucleic acid drugs, the Group achieved predefined milestone based on the exclusive license agreement of ND-L02-s0201 (BMS-986263) for advanced liver fibrosis in the 1st quarter of the fiscal year. The Group continues to engage in clinical trials of idiopathic pulmonary fibrosis and intractable cancer drugs.

As a result of the above, revenue increased by 74.0% to 51,958 million yen and operating margin amounted to 9,790 million yen (operating loss of 3,011 million yen was reported in the previous fiscal year).

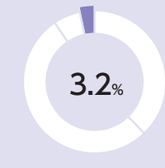
Others

Revenue **27,698** million yen

Revenue transition (yen in millions)



Composition of revenue



Operating income **△9,964** million yen

Operating results

Sales of Membrane (high-polymer separation membrane) grew compared to the previous fiscal year. Demand recovered in various industrial applications. On the other hand, impairment losses were recorded as a result of aggressive restructuring, including revision of our product portfolio, in order to focus on the decarbonization market, which is expected to grow.

In new business, the development of neodymium magnets was discontinued in the current fiscal year.

As a result of the above, revenue increased by 19.0% to 27,698 million yen, while operating loss amounted to 9,964 million yen (operating loss of 7,496 million yen was reported in the previous fiscal year).

Notes: 1. The breakdown of composition of revenue stated above is calculated by excluding eliminations and corporate.
2. Reporting segments were partially changed due to the change made to the management structure during the fiscal year under review. The figures for the previous fiscal year are adjusted to reflect this change.

Industrial Tape

Nitto's unique tape technology leads customers in reducing the environmental impact of their products and processes

Low VOC double-sided tape

Our Goals for 2030

The functional base products business continues to tap into its core expertise based on "adhesion," "coating," and "polymer function control" technologies to help customers to reduce the environmental impact of the products they offer and the manufacturing processes those products undergo. For example, through the supply of insulating materials for use in the motors of electric vehicles (EVs), we can hasten the advent of a low-carbon society. Also, in a bid to accelerate our initiatives for the circular business, we will use bio-based materials for products used at the production process and recover such materials after use. Leading up to 2030, we will supply environmentally friendly products to our target markets of next-generation mobility, information interface, and human life, thus simultaneously solving social issues and maximizing the economic value that we create.

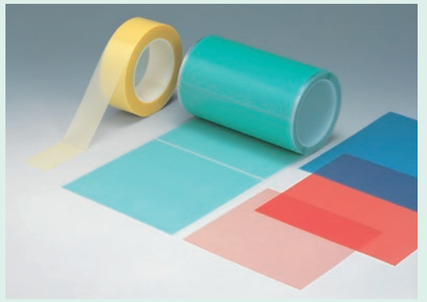
Mid- and Long-Term Strategies

Future Outlook

Many of our functional base products enjoy the leading share in their respective markets. In the next-generation mobility market, we will explore radio wave absorbing materials for radars, which look set to expand in the CASE market. At the same time, we aim to increase our market share for insulating materials for motors by introducing insulating paper that is superior in its resistance to heat, weather, and oil. We will also expand the product lines of our vent filters for electric/electronic components. Going forward, we will allocate more resources to the development of new products that enhance the performance of lithium-ion batteries (LIBs). In the information interface market, we provide manufacturing process materials for a variety of electronic components, making significant contributions to automation and labor saving initiatives. In the human life market, on the other hand, we help resolve social issues by, for example, diverting fluorine functional materials to the production of functional films for use in medical settings and hygiene products whose demand has expanded due to COVID-19. At the same time, we will focus on the development of eco-friendly products that will reduce fluorine industrial waste.

We will remain committed to the provision of new value to the market and the expansion of the list of products with a leading market share by leveraging our unique environment-responsive technologies, on top of *Sanshin* Activities, which are instrumental in our endeavors to create new businesses and products.

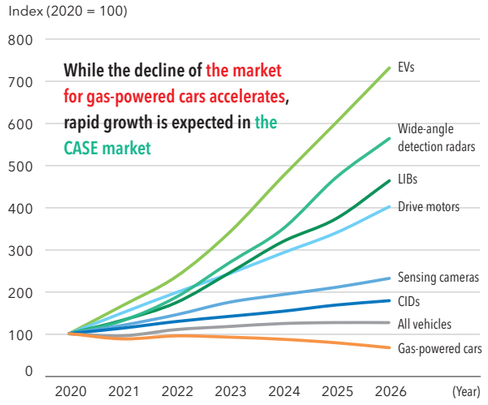
Example of a process material



REVALPHA™
thermal release sheet for electronic component production processes

A unique adhesive sheet that adheres tightly at room temperature but can easily be peeled off by applying heat. These eco-friendly process materials not only achieve automation/labor-saving of various electronic component production processes but also replace the wet method (using wax, etc.) with the dry method using tapes.

Market Growth of Key Applications



LIBs: Lithium-ion batteries CIDs: Center information displays

From fiscal 2021 and onwards, the EV market looks set to grow significantly, which should stimulate demand for other applications, including LIBs, related drive motors, and wide-angle detection radars.

Investment for Growth

We will intensively allocate our resources to the sales expansion of strategic products in our target markets, namely, next-generation mobility, information interface, and human life. At the same time, in order to reduce CO_2 emissions, we are making investment plans to raise the ratio of organic solvent-free, eco-friendly products to approximately 70% or greater (currently approximately 50%) by fiscal 2030. Our plan is that, by strengthening R&D personnel, we will further hone our core technologies to yield constant results. These core technologies will then encourage an increase of investment in mass production facilities, which we hope will lead to the creation of brand new environmentally-friendly products.

Topics

Keeping our products for consumers evolving
The latest addition to the Nitoms COLOCOLO™ Series

Ever since it hit the market in 1983, the COLOCOLO™ Series has kept evolving to better cater to contemporary lifestyles and cleaning needs. The epitome of the Nitto Group's first-class technology and passion for quality, the COLOCOLO™5656 is the flagship model of this popular series. This eco-friendly product is made of carefully selected materials, for example, both its body and refills are made using recycled components. It also features enhanced ease of use to embrace users' needs. Coming in handy and easily blending into room design, this latest model for the next generation is a nice addition to all interiors.

Optronics

Supporting a secure and accessible lifestyle and a sustainable circular society

One-of-a-kind technology for enduring contributions to innovations around the world

Ultra-thin polarizing film

Thin-film metal base board (CISFLEX™)

Our Goals for 2030

We make the world a better place by facilitating the transition to a smart, data-driven society and realizing high-speed telecommunications to help enhance the quality and safety of living for the people. We also accelerate the recruitment of able human resources who underpin our endeavors in this regard and the conversion of our manufacturing processes into ones that are environmentally and socially viable.

To drive the information fine materials business, we will explore opportunities for new applications in a broad range of markets beyond the display market. We will also promote the use of recycled materials and biomass materials for product development. As a supplier of versatile optical films, Nitto remains committed to making living space and mobility space more comfortable and sustainable.

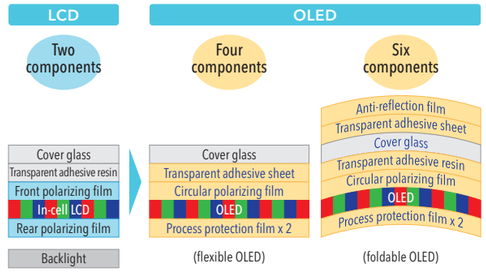
For flexible printed circuit boards, we have established a unique technique of combining element technologies that we have cultivated in the hard disk drive (HDD) market. Based on this proprietary technique, we will continue developing technology that will drastically expand the capacity of storage media, innovating technology for high-speed transmission and higher reliability, and ensuring stable supply, in an effort to meet demand for data centers that is expected to expand further. Furthermore, we will leverage our proprietary technology in developing new products and expand our product portfolio, creating new business domains.

Mid- and Long-Term Strategies

Future Outlook

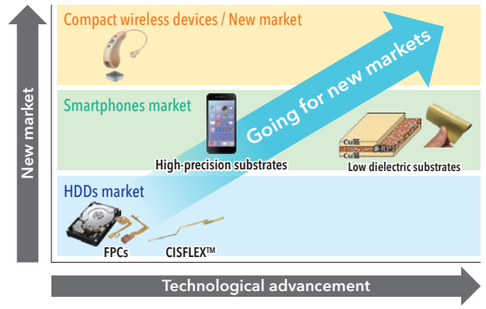
Nitto's information fine materials are currently enjoying a high market share in displays for smartphones and automobiles. We will shift our resources to organic light emitting displays (OLEDs), whose applications look set to increase going forward, while at the same time establishing technologies for the metaverse market, where a number of innovations are expected to occur. By capitalizing on our unique capability of adding optical aspects to functional films, we will work closely with customers from as early as the product design stage, thus assisting many different players in the supply chain in innovating their products. In-house, we will initiate drastic improvements in a way that goes beyond what we can do with existing equipment and production processes.

Where Nitto's Products Are Used: By Panel Technology

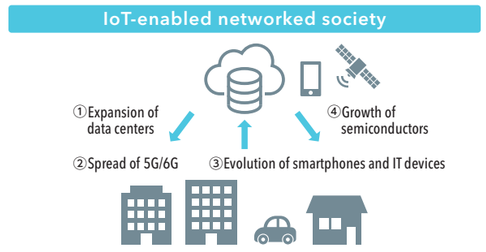


As the data-driven society / smart society expands, the need for flexible printed circuits (FPCs) is expected to grow further and become more sophisticated. In response, we will make constant improvement to and technical innovation for CISFLEX™ thin-film metal base board, for which Nitto has a lion's share, in an effort to further increase memory density of HDDs. With regard to high-precision substrates, we will add new functions in pace with the ever-evolving mobile market and develop/expand applications and markets, such as the semiconductor market, thus contributing to the realization of an ultra smart society.

Portfolio reform and growth strategies by way of *Sanshin* Activities



Market strategies supporting data-driven society



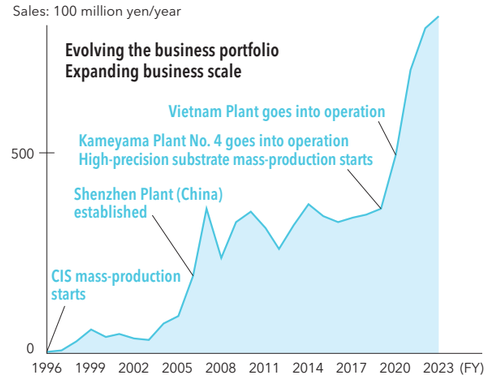
Investment for Growth

For information fine materials, we will thoroughly look at technological trends in the market and determine which technologies we should develop in-house by leveraging our technological prowess which we will acquire through alliances with external partners, and allocate resources accordingly. For in-house technological development, in fiscal 2022 we will double the size of our team for newer markets from last year in order to optimize our human resources for development. For the development of technologies for existing markets, we will continue making environmentally-responsive efforts by replacing production materials with sustainable ones and making our production process solvent-free and carbon-neutral.

Because many of our printed circuit products account for a large share in their market, our responsibilities for stable product supply to the market are growing. In response, we have been making capital expenditures proactively. In 2021, we established a new plant in Vietnam, which started its operation subsequently, as part of our ongoing efforts to ramp up and secure production capacity.

While expanding production capacity for existing products, we will also consider making investments and allocating resources to update and expand our product portfolio.

Sales of CIS and high-precision circuits

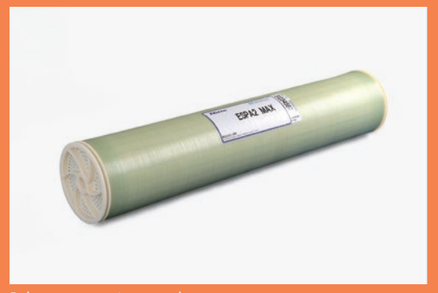


New plant in Vietnam

Human Life

For coexistence with the global environment, better living, and a fulfilled life

Process materials for the manufacturing of oligonucleotide therapeutics


Polymer separation membranes

Our Goals for 2030

In April 2022, we established the Human Life Solutions Sector, which should accelerate our efforts to develop products that help to achieve harmonious coexistence with the global environment and enhance people's living in the broader sense, on top of our age-old services through the supply of medicines. With this, this segment has been renamed from "Life Science" to "Human Life."*

In more concrete terms, our approaches in this reportable segment are three-fold: accessible and user-friendly healthcare, a society where anyone can function, and a secure and safe future.

For "accessible and user-friendly healthcare," we will help to reduce the physical burden of treatment for patients, offer reliable and safe treatment, and reduce medical costs through the discovery and commissioned manufacturing of oligonucleotide therapeutics and the provision of transdermal absorption tape formulations and medical and hygiene materials, among others.

For "a society where anyone can function," we can contribute to the prevention and diagnosis of diseases through, for example, the development of new functional materials for wearable devices that are applied directly to the body, supporting personal mobility and monitoring health conditions.

For "a secure and safe future," we will utilize our proprietary separation technology that we have long cultivated in the polymer separation membrane business to put water resources into efficient use and prevent water pollution in a bid to create a sustainable lifestyle.

* This segment is comprised of the former "Life Science" segment, the membrane business under the "Others" segment, and the personal care component business, which was established in July 2022.

For coexistence with the global environment, better living, and a fulfilled life

Accessible and user-friendly healthcare	A society where anyone can function	A secure and safe future
		
Eliminating the physical burden of treatment	Supporting human mobility	Reducing environmental impacts
Offering reliable and safe treatment	Monitoring health conditions to stay in shape	Providing safe food and drink
Reducing medical costs	Connecting people, communities and lives	Creating a sustainable lifestyle

Mid- and Long-Term Strategies

Future Outlook

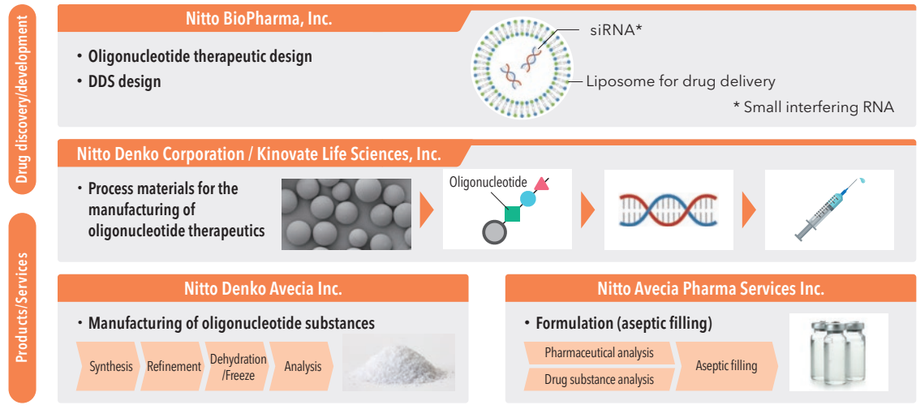
We expect the oligonucleotide therapeutic market to maintain its growth momentum going forward, as development is well under way for a larger patient population, which includes those with lifestyle-related diseases, such as hypertension and dyslipidemia, and cancer, in addition to the ongoing projects for rare diseases.

Our contributions to customers' clinical development take the form of the provision of process materials used for the manufacturing of oligonucleotide therapeutics (NittoPhase™), as well as the rapid and accurate contract manufacturing service, for which we have a proven track record. Our plan is to develop this business in pace with the market by assisting customers' clinical development and commercial production.

For the development (discovery) of new oligonucleotide therapeutics, we are conducting clinical trials in patients with fibrosis and cancer. We will provide patients suffering from intractable diseases with new treatment options as we continue reinforcing our core expertise in the drug delivery system (DDS).

In the membrane product market, we provide water treatment membranes, which are used for the prevention of water pollution and efficient use of water resources. Their superior contamination resistance makes them perfect for advanced treatment at water purification plants, ensuring stable operation over a long term.

Meanwhile, in China and India, we are taking the ongoing moves toward tighter environmental regulations as an opportunity to increase our presence in those markets. We are working on "Zero Liquid Discharge" (ZLD) and other social issues that these two markets might have as we sustain our business growth. At the water treatment membrane manufacturing plant, we reduce environmental impact by recycling liquid waste in an attempt to make it a recycling-oriented green plant.



Investment for Growth

For the oligonucleotide business, in fiscal 2021 we launched one of the world's largest laboratories dedicated to the development of oligonucleotide manufacturing methods, which will be followed by the establishment of a facility for manufacturing substances for commercial medicines and their production line in fiscal 2022. We are also expecting a process material (NittoPhase™) manufacturing facility and the production line to become operational by fiscal 2024, thus boosting our capacity to meet growing demand. Outside of the oligonucleotide therapeutic market, we will also accelerate the drive to create new businesses in the fields of prevention and diagnosis by prioritizing investment for M&As and alliances with external organizations, if such an initiative is deemed necessary.

Commercial drug manufacturing facility

We will continue investing in ramping up production capacity and maintaining and replacing production equipment to keep abreast of market growth in the area of membranes' water treatment application. We will also consider investing in M&As and alliances with external organizations if necessary, in response to changes in the operating environment, such as the tightening of relevant regulations across the globe, and in preparation for the demand for separating CO_2, hydrogen, and other gases, whose market is expected to expand going forward.

To enhance the environmental friendliness of our own production processes, we plan to invest in such initiatives as decarbonization and non-use or recycling of solvents, thus reducing the impact that our operations have on the environment. Meanwhile, in order to accelerate environmental initiatives and new business creation, which may involve M&As and external alliances we will develop people who live up to The Nitto Way and who are capable of building a solid relationship of trust with customers.