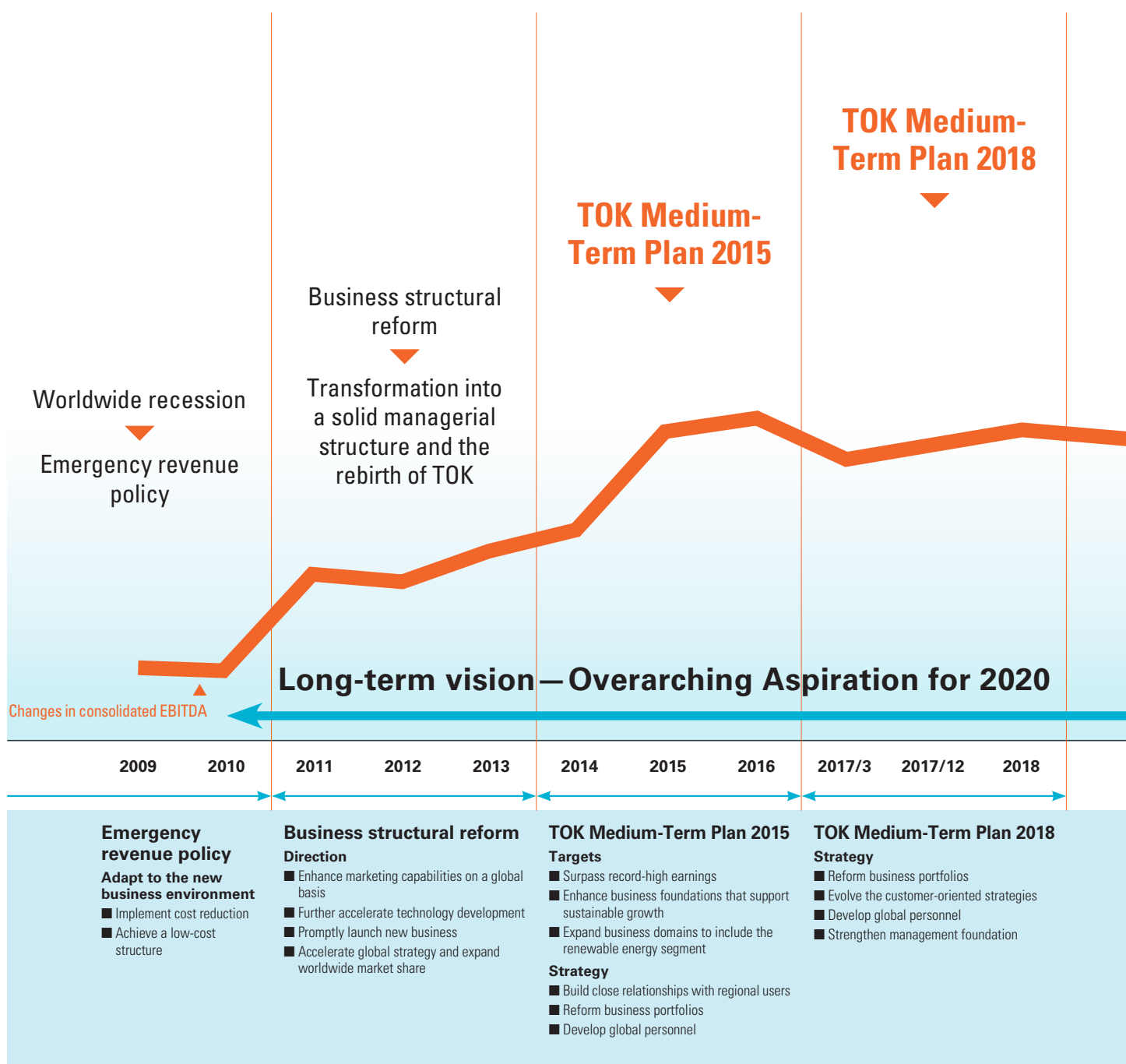


Achieve TOK Vision 2030 and Become

TOK will continue to operate in the innovative semiconductor and electronic component segments as its primary business domain despite rapid technological changes and intense competition. In addition, the company will improve its sustainable corporate value from the long-term perspective, envision the outcome of the next 10 and 20 years, and contribute to the sustainable development of society.



a 100-Year Company in 2040

Become a 100-year company in FY 2040/12

Overarching aspiration (quantitative aspects)

Net sales **200.0 billion yen**
 EBITDA **45.0 billion yen**
 ROE **over 10%**

90th anniversary
FY 2030/12
TOK Vision 2030

The e-Material Global Company contributing to a sustainable future through chemistry

Seven strategies toward 2030

Pass on to a 100-year company

TOK Medium-Term Plan 2021

FY 2020/12 Achieved record-high profits

FY 2021/12 TARGETS:

Net sales **¥122.6 billion**
 Operating income **¥16.5 billion**
 ROE **7.0%**

* Forecast-based amounts for FY 2021/12 are figures announced on February 15, 2021.



Long-term vision – TOK Vision 2030

2019 2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030/12

TOK Medium-Term Plan 2021

Features

- Strengthen business portfolio reforms
- Return to a growth trajectory
- Strengthen balance sheet management and introduce a new dividend policy

Overarching aspiration (qualitative aspects)

- Provide new added value that inspire customers
- Earn trust from stakeholders worldwide
- Continue developing high technological capabilities and international presence
- Enhance corporate value sustainably with an aim to contribute to SDGs
- All employees can work lively with pride



To Our Stakeholders—A Message from the President—



TOK further advances to become a 100-year company in 2040, increasing both its economic value and social value by contributing to a sustainable future through chemistry.

Noriaki Taneichi *President and Chief Executive Officer*



Record-High Performance

Supporting semiconductor supply with meticulous supply chain management amidst global confusion caused by the COVID-19 pandemic

The spread of the novel coronavirus disease started in late 2019 (COVID-19) and has yet to subside with the resurgence of variants while vaccination proceeds. We extend our sincere sympathy to the infected persons, and our deepest condolences to those who lost loved ones. We are also profoundly grateful to all persons engaged in preventing the spread of the infection and maintaining social functions.

Our group achieved record-high performance all in sales, operating income, and current net income attributable to owners of the parent in FY 2020/12 as the second year of the TOK Medium-Term Plan 2021. Despite the current global confusion caused by the COVID-19, the demand for semiconductor photoresists and high-purity chemicals has grown resulting from the dissemination of 5G and IoT, combined with the increased demand for remote working and staying home, and enhanced cloud services. This is because the semiconductor industry was positioned as an essential business in each country even under the COVID-19 pandemic, and because we have continuously responded to the demand by implementing thorough measures to prevent both getting infected and infecting others in cooperation with internal and external stakeholders so that semiconductor production would never be interrupted. On the other hand, since many photoresists and raw materials are tailored and have short shelf lives, excess inventory may result in a substantial loss. Therefore, we have carefully examined at all times the supply-demand balance and order receiving/placing time through close communication with customers, our sites, and suppliers. These efforts have also led to the record-high performance. I would like to once again extend my gratitude to all employees and suppliers who have committed to meticulous supply chain management (SCM) despite the restrictions and inconveniences that affected our sales activities, research and development, and many other aspects.

Regarding the term-end dividend for FY 2020/12, we maintained the DOE 3.5% policy, considering long-term shareholders who have supported TOK as a long-run R&D-based company. In addition, we have also determined to pay dividends commemorating the 80th anniversary at 94 yen per share (annual dividend was 154 yen).

Semiconductor demand seems to further increase in society. The TOK Group will continue contributing to the sustainable development of society by finding opportunities and responding to global risks that include the infectious

disease and climate change, as well as unexpected risks that will emerge, in cooperation with stakeholders.

Enhancing economic value and social value as the global No. 1 manufacturer of semiconductor photoresists with the largest global market share

TOK celebrated its 80th anniversary last year. Under the management philosophy stated by the founder Shigemasa Mukai since the establishment of the company, we at TOK have achieved continuous growth by increasing both its economic value and social value through the inherited integrated thinking for making sure that all management resources and initiatives ultimately lead to contributing to society. The global risk over the past year has refreshed our recognition of the social value that we provide, and the significance of our social responsibility as a global No. 1 manufacturer of semiconductor photoresists.*¹

For example, in the digital transformation (DX) that proceeded in the COVID-19 pandemic, we are proud of contributing to the health and safety of people across the world, improvement of productivity, and shift to the new normal by providing our high value-added cutting-edge products such as EUV/ArF/KrF photoresists, high-density integration materials, and high-purity chemicals. DX particularly advanced in the U.S., and a research reports that automation proceeded at worksites under the COVID-19 pandemic, leading to the productivity improvement by 2.6% in 2020, the highest increase in 10 years.*² Our photoresists were also used in cutting-edge semiconductor devices for supercomputers that supported the development of COVID-19 drugs and the research of preventive measures. We also supplied resists and devices for power semiconductors that were indispensable for extracorporeal membrane oxygenation (ECMO) to treat COVID-19 patients, thereby supporting the rapid production increase of the machines.

As the response to the climate change risks and efforts for decarbonization are accelerated in Japan and overseas, we have also supplied resists and devices for power semiconductors that are critical for renewable energy systems (such as wind power and solar power generation), EVs, and various energy-saving machines. The immediate supply-demand conditions for i-Line and KrF photoresists used in power semiconductors are tight for the automobile industry and for other uses. We have also endeavored to fulfill our supplier responsibility as the manufacturer with the largest global market share by pursuing stable supply based on several sites from the viewpoint of risk diversification.

In the development of new businesses envisioning

future business portfolio, materials for biochip production for next-generation DNA sequencers were introduced into COVID-19 virus analysis sites and elsewhere, and the sales of cell sequencing chips that contribute to the advancement of pathological diagnosis also increased thereby providing social value in the life science field, in addition to the semiconductor and electronic material fields.

In FY 2021/12 as the final year of the medium-term plan, we will leverage the value created as above in responding to new risks and opportunities and will aim to further increase our economic value and social value.

*1 Based on the projected shipment volume of photoresist for EUV, ArF, KrF, g-Line, i-Line in 2020 (calculated based on Fuji Chimera Research Institute, "Current Status and Future Outlook of Cutting-edge/Noticeable Semiconductor-related Markets 2020")

*2 Source: *Nihon Keizai Shimbun*, February 23, 2021



TOK Medium-Term Plan 2021 and Initiatives for Material Issues

Aiming to supply high value-added products that contribute to society to the extent that they outweigh geopolitical risks

At present, the high operating rates continue in the semiconductor industry based on the high demand related to 5G, IoT, and AI, as well as the ongoing shift to a data-driven society. The advancement and demand increase are also in progress for cutting-edge photoresists that promote the performance improvement of semiconductors. In addition, the advancement and demand increase will also proceed in full scale for the cutting-edge packaging domain, including the laminating technology for semiconductors, while the demand for power semiconductors will also be increased by the acceleration of decarbonization in Japan and overseas. Therefore, our business opportunities will continue to increase in the front-end and back-end processes, cutting-edge domains, and general-purpose domains.

On the other hand, the semiconductor industry faces geopolitical risks such as U.S.-China trade friction and tension between Japan and South Korea; and they are tending upwards. The supply-demand conditions are also increasingly tight in the automobile industry and other industries. Under these circumstances, the review of the concentration of semiconductor production in Asia and the reshoring of production are in progress.

Furthermore, the increasing climate change risks are beginning to have a direct impact on the semiconductor industry. The cold wave that occurred in Texas, USA, resulted in the interruption of operations at chemical plants and semiconductor plants, causing concerns about our raw

material cost and supply chain.

While carefully monitoring these global risks, the TOK Group will minimize their impact by developing business in five regions (Japan, U.S., China, South Korea, and Taiwan) for risk diversification, and by gearing up the business portfolio reform that has been promoted since the TOK Medium-Term Plan 2015. We will also continue to thoroughly comply with the laws and regulations in each country, and to pursue the creation of products supported by advanced technologies inherited since foundation, thereby aiming to supply high value-added products that contribute to society to the extent that they outweigh geopolitical risks.

Key measures in the final year of the medium-term plan and initiatives for material issues

The Company-wide Strategy (1) "Accurately identify and rapidly address the customers' voice to build an even larger and stronger pipeline to customers": The customer-oriented sites in the U.S., South Korea, and Taiwan extremely effectively functioned as a communication hub in FY 2020/12. Therefore, we will continue this initiative and consider the deployment of customer-oriented sites in new growing markets.

The Company-wide Strategy (2) "Strengthen marketing, increase understanding of the customers' value creation processes and translate these efforts into new value creation": We have reviewed our sales force and started to practice the marketing approach of seeing the forest while nurturing the trees. We have also focused on technical mar-

keting for each product.

The Company-wide Strategy (3) “Strengthen human resources who can perform research, make decisions, and take actions on their own initiative” and the material issue “Enhancement of personnel measures on a global basis”: We will start the introduction of a new personnel system in 2022, being postponed due to the COVID-19 pandemic, focused on enabling human resources to maintain high motivation and the pursuit of happiness in personnel leading to enhanced corporate value based on a mission grade system. We have further improved the reemployment system, deepened the discussion toward higher employee engagement, and decided to conduct a company-wide engagement survey this year. In the development department, a performance-based reward system and an executive fellow system was introduced respectively in 2018 and in 2019. In 2020, the scope of the technological award system was expanded, adding the manufacturing process to the scope in addition to the conventional product development fields, thereby fostering an enhanced sense of unity. In coming years, we will develop human resources who can take action with the awareness of the global environment and with a broad perspective toward the resolution of new social issues and the creation of innovations, including decarbonization initiatives.

Regarding the material issue “Creation of new added value that contributes to innovation” based on the initiatives under **the Company-wide Strategies (1) to (3)**, progress

has been made in the development of EUV photoresists for the cutting-edge 3 to 2 nm processes for the miniaturization of semiconductors in FY 2020/12.

The Company-wide Strategy (4) “Strengthen management foundation”: We upgraded balance sheet management following the formulation of TOK Vision 2030, thereby starting initiatives for maximizing cash generation capability by setting EBITDA target, and for improving asset efficiency using ROIC as a monitoring indicator. We have also started the operation of a new remuneration system for directors and audit & supervisory board members with an increased rate of performance-linked payment (45%), applying ROE and other evaluation indicators, and promoting the long-term holding of shares while serving in management. We recognize that these measures have steadily improved the management executives’ awareness of performance indicators and capital efficiency and positive attitude for sharing interests with shareholders. In coming years, we will consider to formulate a system setting an ambitious target to help maintaining motivation, even in the downward swing of the market environment and performance.

The TOK Group aims to update the record-high performance in FY 2021/12, through the medium-term plan as above and the initiatives for material issues. These strategies aimed at sustainable growth and corporate value enhancement are defined from a long-term perspective in TOK Vision 2030.



TOK Vision 2030

Aiming to become a 100-year company in 20 years based on the accomplishments achieved over the next 10 years

The TOK Group has inherited since foundation the business model to develop and input high value-added products in niche markets with rapid technological changes. In the meantime, we have introduced a long-term perspective into management after operating deficit was recorded in 2009 for the first time since listing, immediately following the global financial crisis in 2008. Since 2010, we have pursued our management vision “Aim to be a globally trusted corporate group by inspiring customers with high value-added products,” as the overarching aspiration for 2020, while endeavoring to achieve the consolidated operating income of 20.0 billion yen. As a result, these efforts led to the record-high performance in 2020, though the quantitative targets were left unattained. We are also proud of obtaining worthwhile trust in the global market by continuously pro-

viding high value-added products.

To further maintain and strengthen management from the long-term perspective as above, we formulated and disclosed TOK Vision 2030 in August 2020, aiming to become “The e-Material Global Company” contributing to a sustainable future through chemistry as a new management vision for 10 years ahead, and specifying the overarching aspiration and the seven strategies that substantially enhance the quantitative and qualitative aspects. Under this vision, we aim to become a 100-year company in 20 years based on the accomplishments achieved over the next 10 years by continuously increasing cash generation capability in the electronic material field as “The e-Material Global Company” until 2030, while promoting preparations to expand the future blue oceans. From 2030 to 2040, we will advance toward a 100-year company both in the new business fields developed as above and in the e-material field.

Recognition of the external environment—overcoming unexpected risks in cooperation with stakeholders and contributing to the achievement of a smart society

Through the advancement of electronics technology achieved by semiconductors and the progress of communication revolution led by 5G, society in 2030 is expected to be closer to a Super Smart Society (Society 5.0), where autonomous vehicles and AR/VR, remote medicine, agriculture and construction, and smart homes and flying vehicles will become common. The TOK Group will steadily grasp the business opportunities that will continuously emerge on the path toward that goal.

On the other hand, climate change risks, infectious disease risks, and geopolitical risks like U.S.-China trade friction will remain. We also need to prepare for system failure and cyberattacks as the negative side of DX, in addition to a water crisis and food crisis. Furthermore, as TOK is headquartered in Japan, we will have to cope with a decreasing working population. We at the TOK Group will cope with these risks by leveraging our unique managerial resources and strengths that we have accumulated through experience in handling and overcoming numerous risks since foundation. We will also get over unexpected risks that will emerge by joining wisdom with stakeholders.

What we hope by aiming to become “The e-Material Global Company” contributing to a sustainable future through chemistry

The new management vision incorporates our hopes toward the future enhancement of economic value and social value. First, we use the English phrase “The e-Material Global Company” to express our resolution to grow as a global company featuring e-materials over the next 10 years. Second, the phrase “through chemistry” indicates our strong will to persistently explore chemistry, continuing to specialize in fine chemical, our conventional domain maintained since foundation. The letter “応” in our company name, 東京応化 (TOK), presents our attitude to respond to the expectations of customers and society as we explained in the *Integrated Report 2018*. Third, “contributing to a sustainable future” announces our determination to continue exploring chemistry from a customer-oriented viewpoint, while carefully marketing and grasping the expectations of society, markets, and customers and to contribute to the SDGs toward 2030 as the final year. Particularly in this management vision, contributing to a sustainable future through chemistry is the core part and defined as a purpose that expresses our meaning of existence. Under this management vision that incorporates our purpose, we will continue to create new added value that contributes to innovation.

Overarching aspiration (qualitative aspects and quantitative aspects)

The qualitative aspects of the overarching aspiration for 2030 have been defined in five items as “provide new added value that inspires customers,” “earn trust from stakeholders worldwide,” “continue developing high technological capabilities and show international presence,” “enhance corporate value sustainably with an aim to contribute to SDGs,” and “all employees can work lively with pride.”

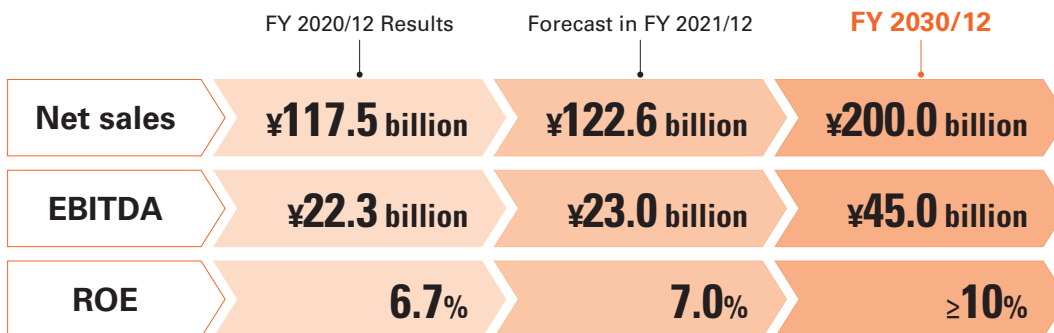
We have set qualitative targets in such a specific manner, because it is the most important that employees as our largest internal stakeholders share and personalize the vision, while establishing win-win relationships with all stakeholders, so that we can cope with various global risks, including unexpected risks, and continue contributing to the resolution of new social issues. With these in mind, I explained this vision in a video message, which has been distributed to employees at all sites in Japan and overseas in four languages.

As quantitative aspects, we have set a target to achieve the net sales of 200.0 billion yen, twice the amount in FY 2020/12, as the source of growth. In addition, we have defined EBITDA as a key indicator, and have set a target of achieving 45.0 billion yen as EBITDA in FY 2030/12, because cash generation capability holds the key to continued long-run R&D and proactive investment in the future. We will also continue endeavoring to improve capital efficiency, and aim to achieve ROE $\geq 10\%$ assuming EBITDA of 45.0 billion yen.

● Our Stakeholders



● Overarching Aspiration (Quantitative Aspects)



* Forecast-based amounts for FY 2021/12 are figures announced on February 15, 2021.

The four earning powers kept upgrading through relationships with stakeholders

At internal meetings aimed at achieving the management vision and the overarching aspiration (both qualitative and quantitative), I often emphasize the importance of continuously upgrading the four earning powers through relationships with stakeholders: technology (manufactured capital), human resources (human capital), human connections (social and relationship capital), and cash (financial capital). Specifically, technology is upgraded through collaboration with customers, academics/research institutions, and suppliers/startups, while human resources and human connections are upgraded through relationships with all stakeholders. While human resources at the TOK Group have been developed through strategy of close relationships with customers, collaboration with noncustomer stakeholders will hold the key to a further leap of TOK. We consider that the high added value generated through the combination of robust financial foundation with these non-financial earning powers based on technology, human resources, and human connections, will be the very source of our corporate value in coming years (see pages 40–45 “Special Feature”).

The TOK Group will be able to renew the record-high performance again in FY 2021/12, driven by the strong semiconductor demand. The “Seven Management Strategies” have been formulated for the group to maintain and strengthen the growth trajectory toward the achievement of the management vision and the overarching aspiration.

Seven Management Strategies

(1) Deepening and developing the e-material field

“Deepen and develop the e-material field” is the most important among the seven strategies, and TOK will continue to grasp business opportunities in the ongoing technological advancement in the front-end processes, back-end processes, and peripheral materials related to semiconductor manufacturing. Specifically, opportunities will increase

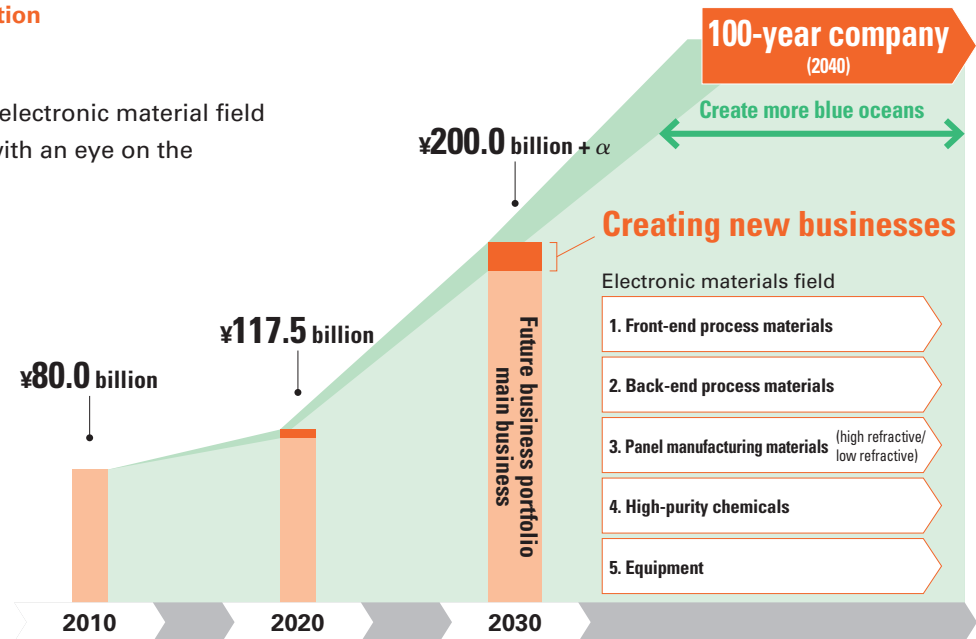
● Seven Management Strategies for TOK Vision 2030



for developing and providing our cutting-edge resists and devices as miniaturization toward the 1 nm scale in logic semiconductors will further progress in the front-end processes, and technological advancement will proceed for high-density integration represented by 2.5D and 3D packaging. In addition, TOK will have increased opportunities for the development and provision of new clean solutions among other peripheral materials, because metals used in metal wiring and insulation film will be changed to improve wiring resistance and capacitance. There is fierce competition in the e-material field with a large number of players, it is a growing industry and therefore earnings can be steadily increased by acquiring certain market shares. The TOK Group will win the competition and steadily increase earnings by leveraging its world-leading microprocessing technology and high-purity processing technology that it has accumulated as core competence, and also strengthening its production engineering and marketing.

● Future Business Composition

- Deepening and cultivating electronic material field
- Creating new businesses with an eye on the business portfolio in 2040



Our net sales target for FY 2030/12 to achieve 200.0 billion yen may seem ambitious relative to our past performance. However, we consider that this is an achievable target by deepening and expanding our present key businesses in the e-material field, considering the expected business opportunities in the shift to a Super Smart Society and the related technological advancement as mentioned above. We will also promote business expansion into the blue ocean domains by grasping niche but promising needs and catering to such needs with chemistry, leveraging our strengths in the established systems that enable development, production, and supply near customer sites based on the customer-oriented strategy. TOK has continued growing by expanding numerous blue ocean domains through efforts for long-run development, listening to customer voice in development themes where marketability and future prospects were uncertain. Some examples are the black matrix materials for LCD, clean solutions for cutting-edge processes, MEMS materials, packaging resists, and KrF excimer laser photoresists for 3D-NAND. We will continue to expand the blue ocean domains by cherishing communication with customers.

(2) Creating new businesses

On the other hand, the net sales target for FY 2030/12 was set at only several billion yen level for new businesses other than the e-material field. This is because I have learned, through my own 13-year experience in the development of new businesses, that dynamic ideas are difficult to emerge

in new businesses when restricted by numerical targets. We will encourage various trials first, and then gradually increase the sales target in the future medium-term plans while monitoring the progress of commercialization. At present, I would like to emphasize that the creation of new businesses is a strategic initiative aiming to establish a new key business to be included in our business portfolio toward a 100-year company in 2040 (20 years ahead). In this process, we will proactively collaborate with many stakeholders, including startups, academics, and research institutions. We will aim at a significant portfolio reform so that a new business will replace e-materials in the long-term vision that will be formulated 10 years from now.

(3) Establishing and utilizing financial foundation

In the e-material field related to semiconductors with rapid technological changes, thinking from customer standpoint at all times and having the same viewpoint as customers, are the essential requirements for success. Therefore, the TOK Group has continued growing by proactively investing in the same costly equipment as at customers in the semiconductor industry in order to establish the same internal environment as at customers, thereby deepening the customer-oriented strategies from customers' viewpoint. In the TOK Vision 2030, EBITDA is introduced as a new KPI to maximize cash generation capability in order to maintain these initiatives, and ROIC is also used as a monitoring indicator, so that management resources can be utilized more efficiently.

In the meantime, TOK aims at creating a frank and open-minded business culture as its primary principle and must avoid diminishing equilibrium that may be caused by excess focus on ROIC. In coming years, we will acquire the capability to make proposals while taking risks for customer expectations that have yet to be clarified by maintaining the R&D cost ratio of approx. 8% and fully utilizing the R&D cost that increases in proportion to sales increase. In this way, we will pursue cash generation to enable risk taking because the advancement of these customer-oriented strategies enables our next leap.

(4) Leveraging global human resources/(5) Renovating production sites to create new value/(6) Promoting DX

Regarding the leveraging of global human resources, we will achieve solutions that will lead to new value creation for customers, through continued efforts for human resource development, organizational development, and diversity and inclusion because human resources form the basis of value creation at TOK as mentioned above. We will also promote health and productivity management that will support the health of each employee at the basis of these initiatives. Regarding renovating production sites to create new value, we will endeavor to establish a high-quality production structure. As part of this initiative, we will achieve more efficient high-purity processing technology by upgrading chemical engineering. We consider that the enhancement of environment/occupational health and safety systems is also synonymous with earning power. Regarding promoting DX, we will promote the construction of data warehouses and the development of DX human resources, and lead them to smart factories, etc., utilizing findings in MI (Materials Informatics) that is being leveraged in R&D activities.

(7) Sustainable initiatives for key social issues

I am describing this strategy at the end, because it is rooted in integrated thinking, which aims to make sure that all management resources and initiatives ultimately lead to contributing to society. This is evident in the original form of management principles presented by the founder Shigemasa Mukai that we should contribute to society by raising the quality levels of our products and supplying them with added value, while continuing efforts to enhance our technology in a frank and open-minded business culture, which we shared in the *Integrated Report* last year. We will continue contributing to a sustainable future by pursuing our purpose through chemistry under this inherited principle.

We consider that carbon neutrality, which has become a major trend in Japan and overseas, is another aspect of sustainable future. As a decarbonization initiative at a Japanese

company, we will endeavor toward the goal set by the Japanese government to achieve a carbon neutral society by 2050. The detail and timeline of this initiative will be disclosed in the next medium-term plan that will be announced in February next year. In the present report, I will share a part of the decarbonization initiatives that TOK has taken, and its ongoing activities.

As part of contribution to decarbonization through business, TOK has provided cutting-edge photoresists in each period since it started the photoresist business in full scale in 1968. The miniaturization of semiconductors facilitated by TOK over the approximately 50 years up to 2020 has provided the value of reducing power consumption to approximately 1/2,040,000.*

* A rough estimate for two-dimensional semiconductors (1970: 10,000 nm → 2020: 7 nm); Based on scaling laws where a miniaturization in line width to approximately 1/1,429 of its original size leads to power consumption of approximately 1/1,429², or approximately 1/2,040,000.

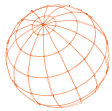
TOK has the largest global market share in i-Line photoresists mainly used for power semiconductors, as earlier mentioned. We also develop and provide KrF excimer laser photoresists for 3D-NAND, which is indispensable to produce SSD (Solid State Drive) with substantially smaller power consumption than HDD (Hard Disk Drives), thereby contributing to energy-saving data servers and devices.

In coming years, TOK will also endeavor to develop next-generation power semiconductor materials that will reduce the power consumption of power semiconductors by half, as well as materials to be used in 6G (next-generation communication standard), which is considered to consume only 1/100 power of 5G.

In addition to decarbonization initiatives through products, we are also promoting steady decarbonizing activities at each business site. The entire power demand at the headquarters building is supplied by renewable energy. We have also decided to switch our commercial vehicles to PHV. In logistics, we strive to reduce CO₂ emissions by seamlessly connecting product distribution channels and raw material procurement channels in their transportation by trucks.

To promote these decarbonization initiatives in full scale starting in the next medium-term plan, human resources again hold the key. Fortunately, today's young generations are highly aware of environmental issues and social contribution. We will continue to enhance both economic value and social value while providing many occasions for these youths to exercise their abilities.

We request your continued expectations for new value creation by TOK.



Medium-Term Plan

Review of the Past Two Medium-Term Plans / Overview of TOK Medium-Term Plan 2021



TOK Medium-Term Plan 2015

— From FY 2014/3 to FY 2016/3 —

In 2012, TOK established customer-oriented sites using an integration of the trinity platform that covers development, manufacturing, and sales in South Korea, where the semiconductor industry was showing remarkable growth, and accelerated its customer-oriented strategies overseas, especially in the United States, South Korea, and Taiwan, under the TOK Medium-Term Plan 2015.

Management Objectives/Features

- **Deepen and expand existing business domains**
- **Swiftly launch new business domains**
 - Surpass record-high profits
 - Carry out large-scale investment to enhance business foundations in support of sustainable growth
 - Expand business domains to include the renewable energy field

Results

- **Achieved record-high profits**
FY 2015/3 Operating income: ¥13.2 billion
- **Customer-oriented strategies made significant progress**
- **Diversified earnings drivers**
 - **ArF excimer laser photoresists:** Growth in sales in North America
 - **KrF excimer laser photoresists:** Two-digit annual growth in sales in Asia
 - **g-Line and i-Line photoresists:** Secured positive growth
 - **High-density integration materials:** Expanded to major OSAT manufacturers and made progress in acquiring new customers
 - **High-purity chemicals:** Succeeded in development and sales expansion of high-grade products

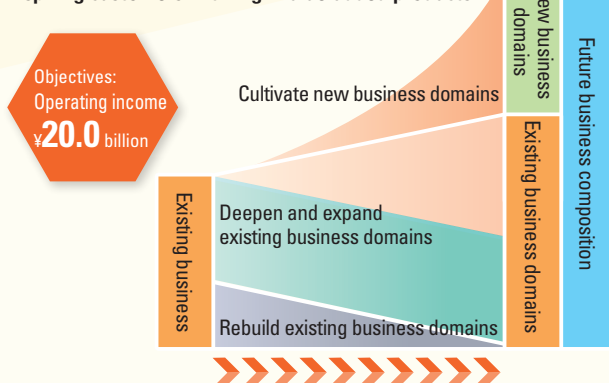
Strategy

- **Company-wide strategies**
Build close relationships with regional users/
Reform business portfolios/Develop global personnel
- **Important strategies**
[Earnings Drivers]
Continue the growth of semiconductor photoresists/Capture business for advanced packaging materials/Expand LCD materials by capturing demand related to high resolution LCD panels for tablet devices and smartphones/Continue multi-faceted development of existing technologies to contribute to sales/Recover earnings in the equipment segment and fully commercialize TSV equipment
[Strengthen Business Potential]
Strengthen development of ArF excimer laser photoresists (at the 10 nm level) to secure market share/Develop next-generation clean solutions/Develop new materials in the renewable energy field/Enter the optoelectronics field

Long-term vision (formulated in 2010)

— Overarching aspiration for 2020

Aim to be a globally trusted corporate group by inspiring customers with high value-added products



Objectives:
Operating income
¥20.0 billion

TOK Medium-Term Plan 2018

— From FY 2017/3 to FY 2018/12 —

By achieving record-high profits under the TOK Medium-Term Plan 2015, the company gained momentum for the overarching aspiration for 2020 (operating income of ¥20 billion), and TOK began proactive investments focusing on strengthening the management foundation and reforming the business portfolios.

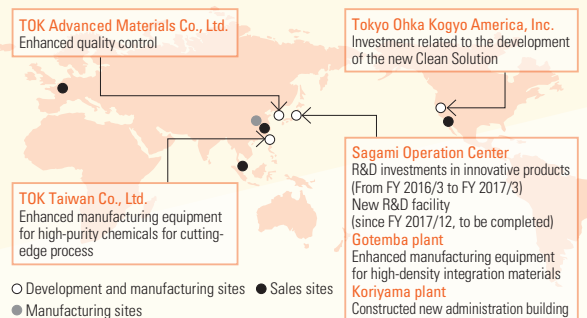
Positioning/Management Objectives/Features

- **Key three years for achieving the overarching aspiration**
- **Strive to deepen existing business domains and swiftly launch new business**
 - Continue proactive investments for the overarching aspiration
 - Aim for record-high profits in the final year
 - Aim for ROE of over 7% and enhance returns to shareholders

Results/Issues

- **Strengthened R&D and production bases**
Invested capital of ¥21.7 billion
- **Leveraged strengths in the innovative semiconductor segment**
 - **EUV photoresists:** Highly rated by major customers
 - **KrF excimer laser photoresists:** Adoption for 3D-NAND (Japan, Asia)/Increasing demand accompanying expansion of 3D-NAND mass production (Japan, Asia)
 - **High-density integration materials:** Adoption for FOWLP (semiconductor field) by a major customer/Adoption by customers in Japan and overseas resulting in expanded adoption and application (electronic components field)
 - **High-purity chemicals:** Expanded adoption for next-generation process by a major customer (Asia)/Adoption of and increased demand for new clean solution (Asia and North America)
- **Midway through reforming business portfolios**
 - **ArF excimer laser photoresists:** A major customer did not adopt (Asia), and major customers' production plans delayed (Asia and North America)
 - **Equipment business:** Delayed expansion of 3D packaging process market
 - **New business:** Delay in commercializing focused themes (high-functional films and nanoimprints)

Main Capital Investments under the TOK Medium-Term Plan 2018



Strategy

- **Company-wide strategies**
[Reform business portfolios]
Renew mainstay products/Create new businesses and new materials/Recover earnings in the equipment segment and develop versatile applications for TSV technology
[Evolve the customer-oriented strategies]
Strengthen development of ArF excimer laser photoresists (for the 10 nm and higher levels)/Further increase market share of KrF excimer laser photoresists (thick-film photoresists for 3D-NAND)/Strengthen customer support structure in the Chinese market
[Develop global personnel]
Promote the development of core human resources with a Group-wide perspective, as well as recruit and promote diverse personnel appropriate for global business
[Strengthen management foundation]
Build a governance system to reduce the risks accompanying globalization and to raise corporate value



2019-2021

Overview of the TOK Medium-Term Plan 2021

—From FY 2019/12 to FY 2021/12—

Management Vision

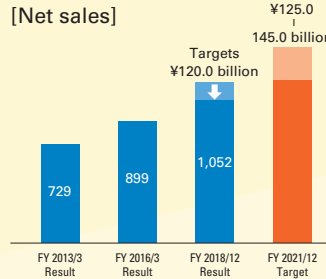
Aim to be a globally trusted corporate group by inspiring customers with high value-added products that have satisfying features, low prices, and superior quality.

[Performance/Targets]

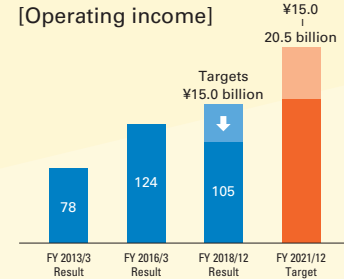
	FY 2018/12 Result	MTP targets FY 2021/12	FY 2020/12 Result	2021/12 Forecast*
Net sales	¥105.2 billion	¥125.0–145.0 billion	¥117.5 billion	¥122.6 billion
Operating income	¥10.5 billion	¥15.0–20.5 billion	¥15.5 billion	¥16.5 billion
ROE	4.7%	Over 8.0%	6.7%	7.0%

* Figures announced on February 15, 2021.

[Net sales]



[Operating income]



Features of the TOK Medium-Term Plan 2021

- Point (i) Strengthen business portfolio reforms** => Ambitiously develop the technologies required by 5G, IoT, and Innovation
- Point (ii) Return to a growth trajectory** => Targeted operating margin (FY 2021/12): ¥15.0–¥20.5 billion
- Point (iii) Strengthen balance sheet management and introduce a new dividend policy**
 - => A new dividend policy targeting a DOE of 3.5%
 - => Flexibly conduct share buyback as a means of returning profits to shareholders

Background and Aims behind Formulation

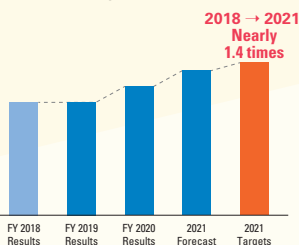
5G/IoT and Innovation

- EUV/ArF photoresists
- KrF excimer laser photoresists
- High-density integration materials
- High-purity chemicals
- Equipment segment

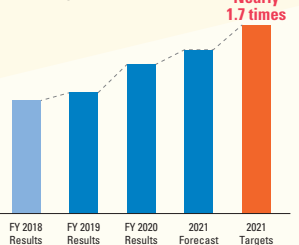
Sales Results and Target of Each Growth Driver

TOK's Drivers

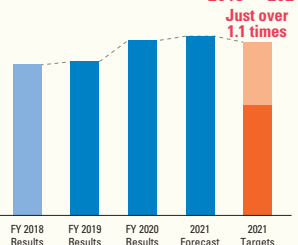
Cutting-edge resists (EUV/ArF photoresists)



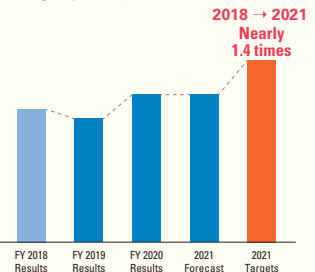
KrF excimer laser photoresists



High-density integration materials



High-purity chemicals



Company-Wide Goals (Qualitative goals)

Cultivate niche markets that the TOK Group should develop.

Company-Wide Strategies

- 1 Accurately identify and rapidly address customers' opinions to build an even larger and stronger pipeline to customers
- 2 Strengthen marketing, increase understanding of the customers' value creation processes, and translate these efforts into new value creation
- 3 Strengthen human resources who can perform research, make decisions, and take the initiative
- 4 Strengthen the TOK management foundation

Strategy for New Business



Financial Capital Policy

[Balance sheet management] As a long-running R&D-driven company, TOK will pursue the optimal balance between **investment, cash reserves, and shareholder returns.**

- 1 Pursuit of higher asset efficiency
- 2 Cash reserves
- 3 Shareholder return policy and dividend policy

Technologies for Sustainable

—Creating Shared Value with Stakeholders—

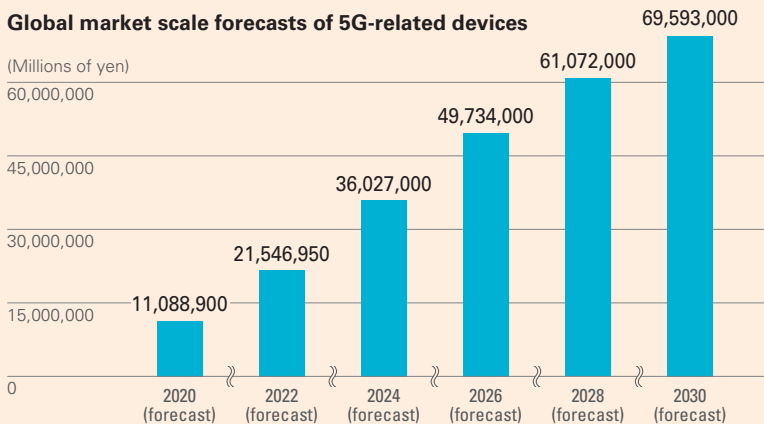


Sustainable Value

Contributing to the achievement of a new normal

with state-of-the-art photoresists

Global market scale forecasts of 5G-related devices



Note 1: Manufacturer shipment amount basis

Note 2: All figures are forecast-based

Note 3: Included circuits and substrates (RF circuits, substrates, etc.), key components and devices (active components, LCD, antennas, passive components, memories, and other devices), materials and evaluation systems (materials, evaluation systems, etc.)

Source: Yano Research Institute Ltd. *Global 5G Related Devices Market* (2020) (released on July 31, 2020)

● Megatrends

The spread of the COVID-19 infection started in 2020 and has substantially transformed lifestyles with noncontact behavioral patterns becoming the *new normal* in order to protect human health and safety.

DX has accelerated around the world in support of the new normal from the technological aspect. In particular, 5G communications, which achieves high speed and large capacity combined with low latency, are expanding as indispensable technology for the sustainable development of society, as well as in all categories of circuits, substrates, components, devices, materials, and evaluation systems.

● TOK technologies

—Upgrading world-leading technologies in cooperation with stakeholders—

In the 5G communications market, which has experienced continuous growth as the social infrastructure linked to IoT and AI, the TOK Group will steadily take advantage of business opportunities in the further acceleration of data processing speed, downsizing of electronic components, increases in the need for high-frequency materials, and enhancement of the functionality of sensing devices. While upgrading its world-leading microprocessing technology and high-purification technology in cooperation with stakeholders, TOK will develop and provide EUV/ArF/KrF photoresists, create diverse shared values, and thereby contribute to the achievement of a more convenient and comfortable new normal.

SDGs to which we contribute



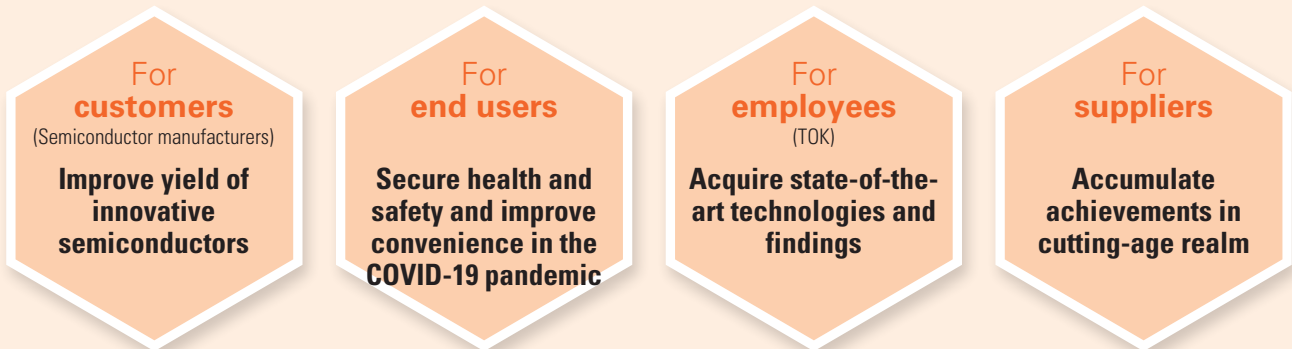
EUV/ArF/KrF photoresists and high-purity chemicals

Development



**Technologies
Enabling
the New Normal**

● **Value for stakeholders—Creating shared value**



● **Collaboration with stakeholders—For continuous improvement of technologies**

With academics and research institutions



- Joint research in the early stage of material design
- Further upgrading basic technologies

With suppliers



- Negotiation in the pursuit of the highest standards
- Appropriate management of chemical substances

Technologies for Sustainable

—Creating Shared Value with Stakeholders—



Technologies
Reducing
Climate Risk

● Social Issues

Decarbonization initiatives have accelerated around the world. In Japan, the revised Act on Promotion of Global Warming Countermeasures was enacted in May 2021, which stated the achievement of virtually zero GHG emissions by 2050. To attain this goal in combination with the target of reducing GHG emissions by 46% versus the FY 2013 level by FY 2030, it is necessary to lead new technological innovations through public-private funding and other means, in addition to enhancing ongoing renewable energy systems and accumulating energy-saving measures.



i-Line photoresists for power semiconductors / plasma ashing systems

Development



Sustainable Value

Supporting decarbonization on a long-running basis

with i-Line photoresists, plasma ashing systems, and WHS*

*Wafer handling system

● Value for stakeholders—Creating shared value



● Collaboration with stakeholders—For innovation and stable supply

With customers

- Development of more efficient materials for next-generation power semiconductors

With suppliers

- Negotiations for the stable supply of high-quality materials

● TOK technologies

—Contribute to a sustainable future through chemistry

SDGs to which we contribute



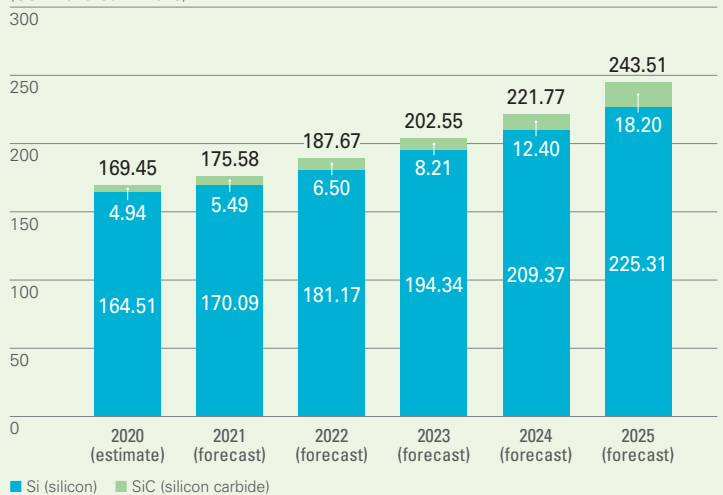
To contribute to decarbonization through business, TOK focuses on the development and stable supply of EUV/ArF photoresists to achieve further miniaturization and power consumption reductions for semiconductors, as well as KrF excimer laser photoresists for 3D-NAND, and i-Line photoresists for power semiconductors, plasma ashing systems, and wafer handling systems.

To lead technological innovation, TOK accelerated the development of materials for next-generation Ga₂O₃ (gallium oxide) / SiC (silicon carbide) / GaN (gallium nitride) power semiconductors that substantially improve power efficiency, as well as materials for 6G (next-generation communication standard), which will consume only 1/100 power of 5G systems.

In particular, TOK will create shared value for decarbonization on a long-running basis by further developing the relationship of trust built over more than 20 to 30 years with many customers, particularly in the power semiconductors-related industry.

Outlook for global power semiconductor market

(USD hundred millions)



Note 1: Manufacturer shipment basis

Note 2: Figures for 2020 are estimates, and those for 2021 onward are forecasts

Source: Yano Research Institute Ltd. *Global Power Semiconductor Market* (2020) (released on July 27, 2020)

Technologies for Sustainable

—Creating Shared Value with Stakeholders—



Sustainable Value

i-Line photoresists and biochip materials

Contributing to improvement of patient QOL

● Social Issues

In the medical setting, it has been necessary to improve the patient QOL and outcomes (with reduced patient burden and improved therapeutic efficiency) by upgrading diagnoses and drug discovery. These needs have substantially increased during the COVID-19 infection that started in 2020.

In response to the healthcare systems overwhelmed during the COVID-19 pandemic, TOK contributes to improvements in diagnoses and viral analysis efficiency and expediting of drug discovery and vaccine development through the stable supply of i-Line photoresists for power semiconductors, which are indispensable for Extracorporeal Membrane Oxygenation (ECMO), and the development and provision of biochip materials and cell sequencing chips.



i-Line photoresists



Extracorporeal Membrane Oxygenation (ECMO)

* The photos are conceptual images.

● TOK technologies

—Applying semiconductor-related technologies to the life science field—

SDGs to which we contribute



Biochip for a next-generation DNA sequencer
* The photos are conceptual images.

TOK started full-scale marketing of biochip production materials in 2015 and has achieved high performance by leveraging the microprocessor technology and MEMS material technology as accumulated in the semiconductor segment. This material is used for next-generation biochips (in DNA sequencers) to reduce the time required for sequencing and to improve sequencing accuracy.

Sales have increased through strategies focused on negotiations with customers in selected markets combined with the emerging need for biochips resulting from the spread of the COVID-19 infection. We will further develop and promote this material because the need for expediting diagnoses, viral analyses, and drug discoveries will continue to increase under escalating infectious disease risks.

—Develop new markets by strengthening online marketing—

The SIEVEWELL™ cell sequencing chip was marketed as a TOK brand in 2019 from the internalized production processes comprising design and lithography. This product has been evaluated for sequencing and archiving many cells, thereby facilitating and quantifying the difficult process of analysis and has contributed to research and development aimed at pathological diagnoses with a reduced physical burden on patients from infectious diseases to oncology. In FY 2020/12, there was progress in its application to a variety of different purposes in the Japanese and overseas markets, and in the development of new products, owing to strengthened online marketing.



Development


● Value for stakeholders

For customers
 (medical institutions, pharmaceutical companies, diagnostic device manufacturers, and research institutions)
Expedited diagnoses and drug discovery

For end users
 (patients)
Reduced physical burden


For employees
 (TOK)
Own brand contributing to enhanced motivation

● Collaboration with stakeholders



With customers

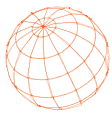
- Long-term product development and application development



With academics and research institutions

- Improve sample levels by accumulating specialized knowledge through academic conferences





Message from the CFO



Focusing on Growth-Oriented Corporate Governance and Pursuing New Management Vision and Purposes

Yoichi Shibamura

Director, Senior Executive Officer,
Department Manager,
Accounting and Finance Department

Focusing on growth-oriented corporate governance based on management principles and DNA in place since the founding of TOK

◆ Pursuit of both economic value and social value toward the achievement of sustainability

The recently formulated new management vision—The e-Material Global Company—contributing to the purpose of a sustainable future through chemistry, which expresses the strong intention of the TOK Group to pursue both economic and social value toward the achievement of sustainability. Naturally, this new management vision and purpose are rooted in integrated thinking, which aims to ensure that all management resources and initiatives ultimately *contribute to society* as stated in the management principles of the founder, Shigemasa Mukai, on page 14 of this report.

Therefore, I will share our resolve above with all stakeholders by focusing on growth-oriented corporate governance in order to powerfully promote the *development and effectively use of financial position* as one of the seven strategies in TOK Vision 2030 as formulated under the new management vision.

For more than 80 years, the TOK Group has embodied its inherited corporate spirit and expressed as an *eternal startup*, as well as its corporate characteristic of a *long-running R&D-driven, top global niche company* as a result of this spirit. This is the unchanging DNA of the TOK Group under the management principles: Create a frank and open-minded business culture, continue efforts to enhance our technology, raise the quality levels of our products, and contribute to society. With this DNA in place, I believe that the thorough pursuit of a business model to persistently develop and market fine innovative chemical products is the correct means of pursuing economic and social value toward the e-Material Global Company contributing to a sustainable future through chemistry.

The large step taken in 2020 toward more long-term financial capital policy

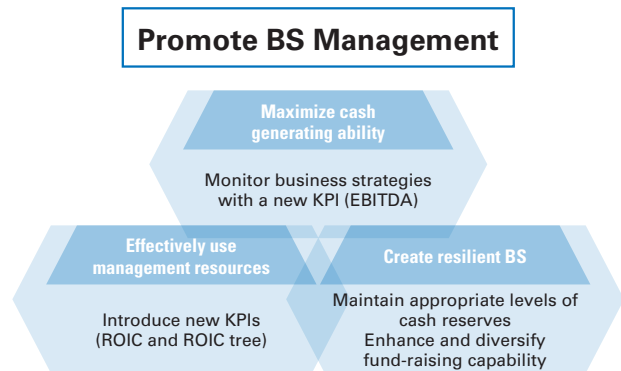
◆ Company-wide full-scale initiatives started toward the advancement of BS management

The greatest achievement made concerning the financial capital policy in 2020 was the clarification of *development and effectively use of financial position* as one of the strategies under TOK Vision 2030. In other words, we aligned the directions of the long-term financial capital policy and the long-term business strategies and investment strategies, while aiming to maximize cash generating abilities, effectively use management resources, and create resilient BS for a more advanced implementation of BS management measures. As a result of this alignment of the direction, we announced specific long-term targets, including EBITDA of 45.0 billion yen and ROE $\geq 10\%$ in 2030. We also established a structure for pursuing the optimal balance between investment, cash reserves, and shareholder returns as a specific financial capital policy to be thoroughly promoted.

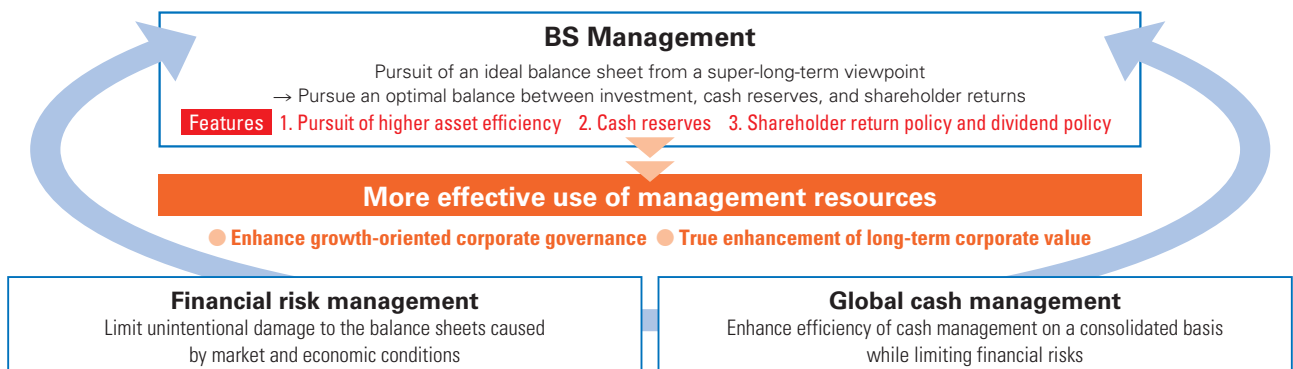
Another achievement was the company-wide implementation of BS management based on TOK Vision 2030, which was started steadily both at the management level and at the on-site level of each group company. For example, EBITDA was specified as a new KPI under the Vision and is taking root as an indicator measuring cash generating ability. ROIC and IRR as parameters for asset efficiency are being used as multifaceted tools for forecasting and for the relevant PDCA, at the committee of officers, at the management strategy meeting to discuss large-scale investments, as well as in requests for investment approval. In the ROIC reverse tree management of production sites, each plant started to use the *new plant balance*, which has been revised to measure real capacity. In-house communication and education are in progress with regard to the concepts of capital cost and the investment hurdle rate. In this way, initiatives under topics that had only been announced as principles and ideals and discussed at the officer level are being rapidly and steadily specified and implemented on a group-consolidated basis, both at the management level and on-site.

On the other hand, two new key requirements have emerged. One is the necessity for further strengthening of growth-oriented corporate governance for future growth in the financial capital measures focused on BS management. As specific measures, on-site proficiency in the use of new KPIs (e.g., EBITDA, ROIC, IRR) will be further enhanced, until all members from management executives to on-site employees have a complete command of these KPIs. The second requirement is to reset the key BS items in accordance with the next medium-term plan, such as debit balance that includes target cash reserves, target equity range, and the credit balance, including liability utilization measures.

Develop and effectively use financial position as one of the seven strategies under TOK Vision 2030



Continue promoting the *trinity* of BS management, financial risk management, and global cash management



In 2021, finish the current medium-term plan while forming the basis for the new medium-term plan

● Toward the formulation of the new medium-term plan backcast from TOK Vision 2030

In 2021, based on the recognition of the requirements above, we will complete the current TOK Medium-Term Plan 2021, while formulating the new medium-term plan backcast from TOK Vision 2030. While forming the basis above, we will focus on the following four points to further strengthen growth-oriented corporate governance.

First, we will further upgrade the *eternal startup spirit* to attain the new management vision and provide thorough support for long-term business activities in order to achieve sustainable growth as a *long-run R&D-driven company*.

Second, in addition to financial value, we will endeavor to maximize our social value by placing decarbonization initiatives and contributing to the SDGs in front of us.

Third, for the two measures above, we will repeat thorough cash flow simulations and BS simulations for the implementation of BS management that can actually maximize cash generating ability, effectively use management resources, and create resilient BS.

Fourth, we will further enhance the dialog with the capital market (IR and SR) to help in the understanding of the relationship between our corporate characteristics as a long-run R&D-driven top global niche company and the purpose. Based on this dialog, we will continue to pursue an optimal balance between investment, cash reserves, and shareholder returns.

● Strengthening ROIC improvement measures both through a macro approach and through a bottom-up approach

We will further infiltrate ROIC improvement measures to effectively use management resources both through a macro approach and through a bottom-up approach.

For the macro approach, company-wide training on the effective use of assets is being implemented as part of BS-oriented thinking training and CF-based management training. The changes in ROIC by business and by entity are analyzed. These results are combined with IRR as PDCA tools for business and investment strategies by business and by entity, as well as tools for in-house discussions among management executives.

In the bottom-up approach, certain plants have been designated ROIC model plants to further expand the idea from Japanese sites. The formulation of the ROIC reverse tree, and the activities based on the tree, have been started for on-site improvement and effective use of assets. On-site employees reacted very favorably. Progress has been felt in the activities for the effective use of plant fixed assets and those for the improvement of cash conversion cycle (CCC) linked to the plants and sales departments.

We will continue to strengthen ROIC tree-based initiatives to improve the ROA numerator, while degrading the denominator into invested business assets and cash reserves, while pursuing the respective medium- to long-term efficiency and thereby maintaining robust BS and attaining ROE ≥10% by FY 2030/12.

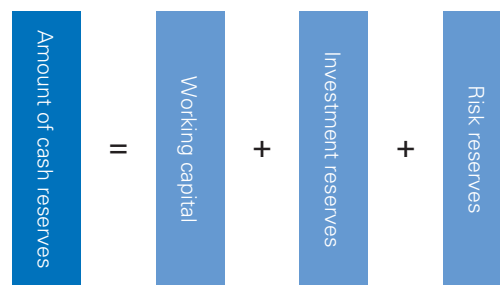
◆ **Upgrade cash reserves and financial leverage by introducing new concepts**

For cash reserves in the tree below, the concepts will be partially reviewed, and the moving targets will be reset in order to achieve higher efficiency. As specific measures, a new concept of net cash will be introduced. The related policy will be adapted according to the operated situation so that net cash can be used for risk reserves and for investments in major challenges coupled with risks. The review of financial leveraging will also be considered from the aspects resetting the optimal equity range and the more effective use of liabilities.

Policies on cash reserves

As a long-run R&D-driven company, TOK will calculate cash reserves from the standpoint of **securing the necessary funds**.

- Develop technologies in anticipation of a super-long time frame
- Continuously tackle challenges over a super-long time frame
- Respond rapidly when the unexpected happens (restoration and rebuilding from major disasters)

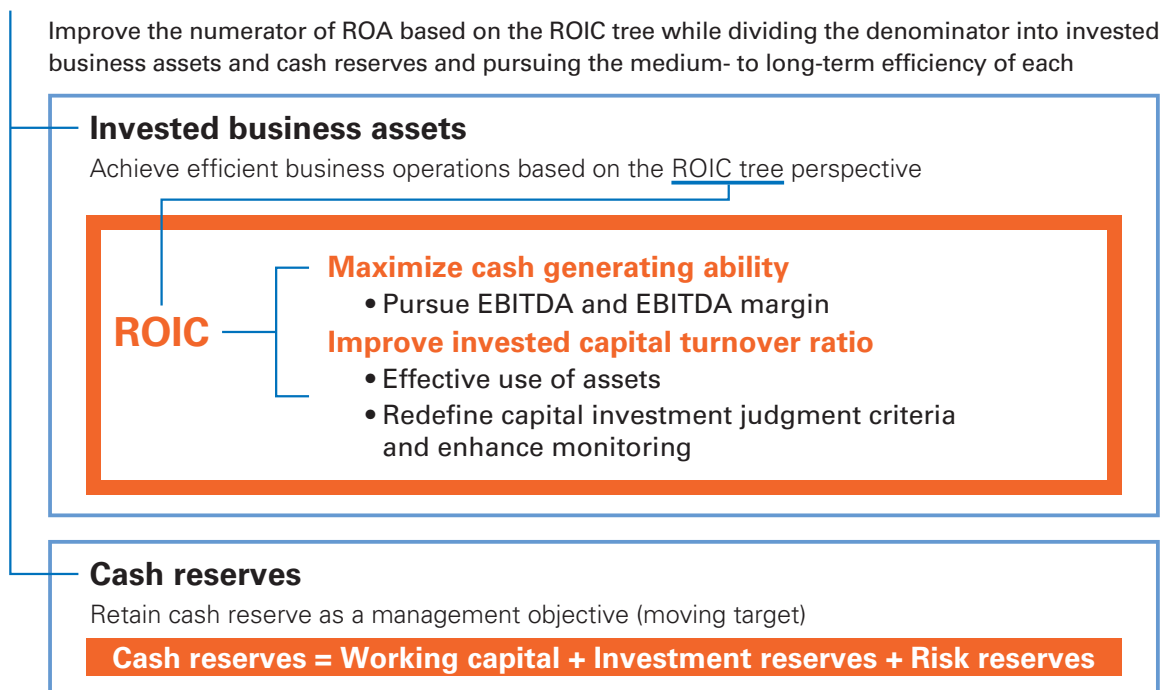


◆ **Paid the highest dividend ever to extend gratitude to long-term shareholders**

TOK introduced a new dividend policy targeted at DOE 3.5%, starting with the year-end dividend for FY 2018/12, as one of the key revised financial capital policies. Under this policy, TOK increased the annual dividend by 32 yen year-on-year in FY 2018/12, and by 24 yen year-on-year in FY 2019/12. TOK paid the highest dividend ever in FY 2020/12 at 154 yen, while adding a normal dividend increase (by 4 yen) and the 80th anniversary dividend (30 yen) to the BOY estimate, substantially exceeding the DOE 3.5% level. We paid 30 yen as the 80th anniversary dividend partly because we achieved income that substantially exceeded the BOY estimate and partly for the purpose of

Improving ROIC for better ROE to utilize management resources effectively

ROE = ROA × Financial leverage

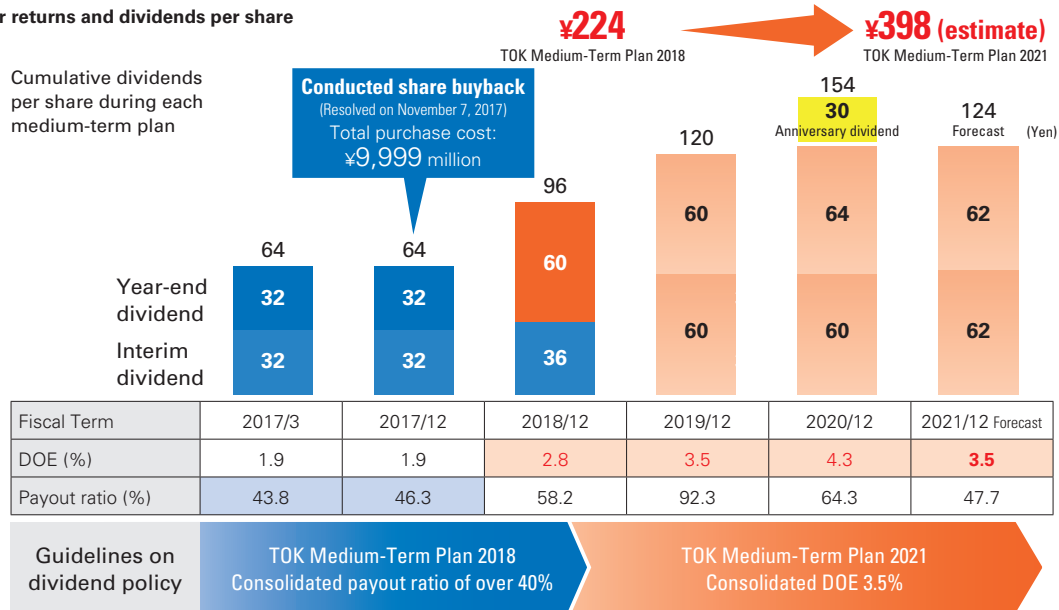


extending our gratitude for support by shareholders that enabled us to celebrate the 80th anniversary and asking for their continued long-running support for our group. This dividend was based on our assessment that net cash and equity would be adjustable within a certain range, though long-term investment increases in human and material resources were expected under TOK Vision 2030, considering the strong uncertainty of business environment and the escalating communication reform.

Our future dividend policy will be clarified in the next

medium-term planning stage. We will stick to the DOE-based dividend policy because we shifted from the consolidated payout ratio-based standard to the DOE-based standard in 2019 for the primary purpose of rewarding long-term shareholders who provide long-running support for TOK as a long-running R&D-driven company. We will also consider better shareholder returns linked to the advancement of cash reserves and the review of finance leverages as mentioned above.

Shareholder returns and dividends per share



Initiatives for IR and SR, and tax governance

Further reduce capital cost and improve corporate value, enhance dialogs with shareholders and investors

To reduce capital cost leading to improved corporate value, TOK has pursued the optimal capital mix (review of DE ratio) and thorough financial risk management as key financial means. In addition, the company considers it critical to minimize the long-term perception gap by gaining adequate understanding from shareholders and investors, primarily through detailed explanations of business strategies, investment strategies, and financial strategies aimed at the sustainable, stable, and efficient increase of group cash generating ability.

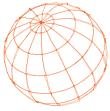
Under this policy, TOK had 281 individual meeting sessions with analysts and institutional investors, in addition to the periodic IR meetings in 2020. I also had individual dialogs with more than ten institutional shareholders. We have been encouraged by the many requests for continued and enhanced individual dialogs in 2021 onward, based on the extremely vigorous discussion on business strategies, investment strategies, and financial strategies under TOK Vision 2030. We will continue to enhance IR and SR activities.

Further strengthen global tax governance as part of survival-oriented governance

The TOK Group has achieved the overseas sales ratio of approximately 80% and aims to become an e-Material Global Company. The key for survival-oriented governance will be to maintain and strengthen global tax governance that can ensure appropriate tax affairs and compliance. We recognize this is a prerequisite for establishing a win-win relationship with all stakeholders.

We are creating an appropriate tax governance system with the parent company as the control tower that gathers expertise on taxation on a consolidated basis and for each entity, with the intention of addressing issues in international taxation including problems associated with transfer price taxation and strengthening base erosion and profit shifting (BEPS) measures by local authorities in each country.

Specifically, we have researched taxation and tax customs, as well as product market conditions, in all regions where we do business, while maintaining an overview of tax affairs and identifying requirements at each entity and on a consolidated basis. At the same time, we formulated a transfer pricing policy based on the information above, incorporated the policy into the transfer pricing documents in BEPS, and enhanced training for group tax personnel in each country. In this way, we will expedite transfer pricing measures within the group and improve effectiveness, while continuing to strengthen tax governance on a worldwide basis.



Message from the Director in Charge of the Environment



We will focus on the Environment, Health, and Safety (EHS) activities to enhance corporate value toward 2030 and 2050.

Yuichi Murakami *Director, Officer, Department Manager, Manufacturing Department*

Risks and opportunities

◆ Recognizing risks coupled with opportunities and our social responsibility

In FY 2020/12, TOK achieved record-high performance by steadily grasping growth in the semiconductor market that resulted from the global acceleration of DX during the COVID-19 infection and the dissemination of 5G and IoT, combined with the increased demand for remote working and staying at home, as well as enhanced cloud services. Semiconductor demand is still increasing, and our business opportunities are continuously expanding both for semiconductor materials and for devices in cutting-edge segments, legacy segments, front-end processes, and back-end processes.

On the other hand, the production of some semiconductor manufacturers was interrupted by several accidents and natural disasters, and it caused production delays in various industries. Because semiconductor-related industries now affect all parts of our daily lives, we are keenly aware that increased opportunities signify increased risks and social responsibility at the same time. The TOK Group will retain its unspoken rule of never interrupting our plant operation and never interrupting the customer production line as basic manufacturing policies. As prerequisites for these policies, we will establish a safe and comfortable work environment and ensure a stable supply at the quality levels required by customers at all sites in Japan and overseas, thereby fulfilling our supplier responsibility as the manufacturer with the largest global market share of semiconductor photoresists.

◆ Reinforce earning powers under the new environmental policy and occupational health and safety policy

To put into practice the basic policies above, we will continue to appropriately upgrade the EHS activities, thereby minimizing operating interruption risks, environmental risks, and infectious disease risks under the environmental policy and the occupational health and safety policy that have been revised in accordance with the new CSR policy. In this way, we will reinforce our earning power while reducing short-term and medium-

long-term growth inhibitors, thereby leading to sustainable improvement of corporate value.

Environmental Policy

TOK Group strives to do businesses by achieving a sustainable society through investing appropriate management resources and ensuring health, safety and an appropriate environment through the Responsible Care Initiatives*.

- Complies with all environmental laws and regulations in each country and region in which we operate.
- Strengthens the safe-and-environmentally-friendly handling and management of chemical substances.
- Promote efficient use, reuse, and recycling of resources.
- Improves energy-saving and global warming prevention activities.
- Promote environmental pollution prevention activities.
- Promotes a healthy biodiversity.

* Activities to ensure the environment, health, and safety related to all processes of chemical substances from development, manufacturing, distribution, use, final consumption, and final disposition.

Support innovative value creation with EHS

◆ Strengthen information provision concerning chemical substances

The driving force of TOK growth is contributing to the resolution of social issues in each era through state-of-the-art fine chemicals. We will advance this business model by reinforcing our EHS activities. For example, EUV photoresists that support the cutting-edge miniaturization of semiconductors usually contain new chemical substances as the raw materials. Therefore, we take utmost care in providing adequate information to customers, including information on safe use, disposal method, toxicology, and applicable laws. We also closely share the raw material information with all suppliers and ensure safety training for employees, as well as work environment maintenance, thereby reducing risks for all stakeholders in the supply chain.

Occupational Health and Safety Policy

TOK Group, as prioritizing workers* health and safety, fosters safety cultures by preventing accidents, disasters, and illnesses in the workplace.

- Complies with all laws related to occupational health and safety in each country and region.
- Reduces risks by completing job hazards analysis.
- Provides comprehensive education and training for employees.
- Strives to strengthen our safety and disaster prevention systems for the purpose of minimizing and mitigating damage for accidents, disasters, or any other unforeseen event.
- Makes effective and continuous improvements by investing appropriate resources.

* Any and all labor providers to TOK.

Tighter Environmental and Safety-Related Laws and Regulations, etc. around the World

- **Japan**
 - Revisions to the Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (Chemical Substances Control Law) (June 2017)
- **U.S.A.**
 - Revision to the Toxic Substances Control Act (TSCA) (June 2016)
- **Europe**
 - The European Chemicals Agency (ECHA) list of chemical substances of very high concern
- **South Korea**
 - Revisions to the Chemicals Control Act (proposed revisions published in January 2019)
 - Revisions to the Occupational Safety and Health Act (January 2019)
- **Taiwan**
 - Revisions to the New and Existing Chemical Substances Registration Act (March 2019)
 - Revisions to the Toxic Chemical Substances Control Act (January 2019)

Because the pursuit of global environmental sustainability has accelerated and expanded around the world, increasingly stringent environment and safety laws, as well as chemical substance management regulations, are being applied. The TOK Group complies with all applicable laws and regulations, including the EU REACH regulation*¹ and provides enhanced support for regulatory compliance by all customers. As specific measures, TOK issues a warranty for the non-use of prohibited/controlled substances to help in the acquisition of CE marking*² and other certifications for customer products. Our EHS Division provides detailed information, thereby establishing a stronger relationship of trust with customers.

*¹ EU regulation that manages the registration, evaluation, and accreditation of chemical substances through an integrated system with the aim of ensuring complete fulfillment of responsibility on the producers' part, as well as thorough compliance with preventive principles.

*² Marking that certifies product conformance to the essential EU requirements

Responding to laws and regulations in advance is as important as developing cutting-edge technologies

The primary domain of TOK is the semiconductor and electronic component fields with rapid technological change and intense competition. Therefore, understanding the information on new

laws and regulations in advance for proactive action is as important as developing cutting-edge technologies. For example, we have steadily removed persistent, bioaccumulative, and toxic substances from the list of candidate materials for our products. PFOS*¹ and PFOA*² were completely abolished as of March 2021. There is a new ongoing trend toward more stringent PFAS*³ regulations, and we are collecting information in preparation. In 2021, we increased the update monitoring frequency on laws and regulations to quarterly. To support the measures above through DX, we have continuously strengthened the in-house linkage of the chemical substance database from the development stage.

*¹ Perfluorooctane sulfonate

*² Perfluorooctanoic acid

*³ Per- and polyfluoroalkyl substances

TOK Medium-Term Plan 2021, material issues, and initiatives toward TOK Vision 2030

Restructuring EHS activities in the COVID-19 pandemic

TOK regards the integrated management of chemicals, reduction of environmental impacts, and occupational health and safety for employees as important management requirements, and the company has promoted responsible care activities, while minimizing the influence of apparent risks in Japan and overseas, while operating the Group Management System (GMS) since 2015 to prevent potential risks from becoming apparent. Because the structures have been established to a certain level in Japan, we aim to disseminate robust risk management into all sites, including overseas subsidiaries, under the TOK Medium-Term Plan 2021, which was started in 2019, thereby reinforcing the chemicals and environmental risk management both for human resources and for organizations. In FY 2020/21, we strengthened the EHS structure in Taiwan. Because travel was restricted due to the COVID-19 pandemic, we restructured the EHS activities leveraging online meetings, remote audits, and paper audits. In the coming years, we will promote more effective use of online measures to share honest opinions and subtle implications, which were conventionally exchanged face to face.

Continuously strengthen BCP

To cope with the risks coupled with the increasing business opportunities, we continuously strengthen BCP.

Regarding the direct impact of the climate change risk, we are enhancing resilience on a short-term, medium-term, and long-term basis through risk analyses based on the Task Force on Climate-Related Financial Disclosures (TCFD) (see pages 54–55). We strengthened risk distribution through a multi-site system after learning lessons from the Great East Japan Earthquake in 2011. We will maintain and strengthen this system because its effectiveness was verified during the Kumamoto Earthquake in 2016. We also have a rule to maintain the raw material stock equivalent to three months, assuming an emergency at the suppliers. We will continue to fulfill our supplier responsibility by continuously upgrading the BCP as above, led by the Risk Management Committee chaired by the president and chief executive officer.

Enhance earning powers by achieving higher product quality and reducing environmental impact

Regarding creating new value through renovation of the production sites as one of the management strategies under TOK Vision 2030, we will renew equipment with models of higher energy efficiency. Future renovation plans will be crystallized in the next medium-term plan. To establish a high-quality production system as a key measure for the strategy above, we will pursue company-wide strategies for the medium-term plan and initiatives for material issues under the quality policy, while continuously advancing production technology to ensure a stable supply at the quality levels required by customers, thereby further enhancing earning power. To this end, we will further upgrade customer-oriented strategies based on the trinity of sales, development, and manufacturing, and we will achieve higher product quality and reduce environmental impact through collaboration with customers, TOK, and suppliers.

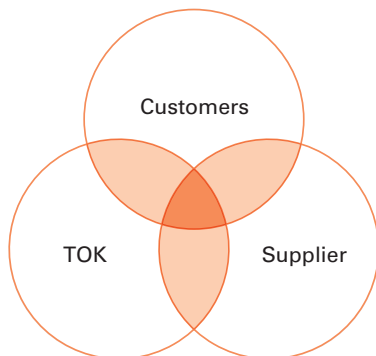
Quality Policy

Aim to be a globally trusted corporate group by inspiring customers with high value-added products that have satisfying features, low prices, and superior quality. Deepen and expand existing business domains and swiftly launch new business domains.

Each one of us clearly understands the current situation and challenge ourselves with a sense of crisis.

1. Strengthen marketing ability, set goals seriously, be motivated by a strong sense of crisis, prepare well, and take immediate action.
2. Promote human resource development for global operation.
3. Establish a system to capture customer's voice accurately and to respond them immediately.

Linked activities by customers, TOK, and suppliers



Common goals: achieving higher product quality and reducing environmental impact

Road map toward ISO 45001 certification

2020	2021	2022	2023
<Acquired certification> Gotemba Plant	<Review in progress> Koriyama Plant Utsunomiya Plant Aso Plant Shonan Operation Center	<Review in progress> Sagami Operation Center Headquarters Kumagaya Plant	<Review in progress> Logistics Center
			2023 Complete acquisition at all sites in Japan

Incorporating third-party perspectives to further disseminate an occupational safety culture

Regarding the reinforcement of environment and health and safety systems, as another key measure for renovation of the production sites to create new value, we achieved zero accidents with lost workdays in FY 2020/12 and reduced workplace accidents by 46% compared with the previous year. However, there is room for further improvement. We will apply the results of the RBA-VAP audit* conducted on Koriyama Plant in 2020 for improvement at other sites and promote measures toward ISO 45001 certification at each site, thereby further disseminating our occupational safety culture.

* RBA-VAP audit: Validated Audit Program conducted by Responsible Business Alliance

Focus on decarbonization toward a sustainable future

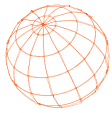
Decarbonization has become a major trend in Japan and overseas. We recognize it as a means of achieving the sustainable future stated in the new management vision, and we will powerfully advance toward the goal set by the Japanese government to achieve carbon neutrality by 2050. As a preliminary step, we have slightly raised the CO₂ emissions reduction target by 2030, which was set in 2020 (see page 98). The TOK Group specializes in fine chemicals, and the company will strengthen its earning power by advancing decarbonization initiatives, while progressing toward the target in collaboration with internal and external stakeholders. We ask for your continued expectations for value creation by the TOK Group.



Kimitoshi Kato
General Manager, EHS Div.

We will also pursue the achievement of a circular economy and the risk assessment of infrequent operations

Since its founding, TOK has been based on *integrated thinking* to ensure that all management resources and initiatives ultimately lead to *contributions to society*. TOK will continue to contribute to the resolution of social issues through fine chemical products, while strengthening its earning power through initiatives for the environment and for occupational health and safety. As environmental initiatives, we will pursue the achievement of a circular economy and decarbonization. Regarding occupational health and safety, we will incorporate third-party perspectives while enhancing the risk assessment of infrequent operations.



Message from the Director in Charge of Research and Development of New Businesses



We will contribute to decarbonization through persistent long-running development activities.

Yusuke Narumi *Director, Officer, Department Manager, New Business Development Department*

Develop new technology that contributes to decarbonization

◆ Develop in-house recycling ecosystem based on “chemical looping”

The TOK Group achieves decarbonization through business by providing semiconductor miniaturization materials, 3D-NAND materials, and power semiconductor materials. As a new initiative, we strive to develop an in-house recycling ecosystem based on chemical looping.

◆ Collect super-high-concentration CO₂ without using air for reaction

TOK discharges organic solvent effluents generated in the manufacturing process after partial recycling, combustion, and detoxification. Usually, the separation and recovery of CO₂ through the normal combustion of effluents in the air takes considerable energy because the CO₂ in the exhaust gas is only approximately 13%* due to the large shares of atmospheric O₂ and N₂ that are not used for combustion. In addition, atmospheric N₂ is oxidized through combustion. In general, a thermal power plant is considered to emit 30 to 100 ppm of thermal NOx after denitration treatment.

In contrast, TOK is developing a system based on chemical looping, where atmospheric oxygen is not used in the reaction, and high-concentration CO₂ can be selectively collected by controlling and optimizing reactive conditions. This system can also minimize thermal NOx because the reaction temperature is lower than for normal combustion. Investigations using present experimental equipment have indicated a CO₂ conversion efficiency of 95% or higher and a NOx level of approximately 1 to 10 ppm (lower measurement limit at present), demonstrating the superiority of this system. Currently, joint research with universities and other research institutions is in progress toward in-house practical application of this system. Subsequently, we will also pursue energy recycling and CO₂ conversion linked to this system.

The system still has many problems to clarify, we will persistently continue with long-running development as our characteristic as part of our contribution to decarbonization.

* Calculated values

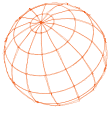


Hiroshi Kumazawa
New Business Development Div. 1

Visualize benefit to enhance motivation for development toward decarbonization

The general policy speech by Prime Minister Suga in October 2020 signaled the start of initiatives to achieve carbon neutrality by 2050. At the Intergovernmental Panel on Climate Change (IPCC) 2013, it was clarified that zero emissions were the only means to stop climate change. After the Paris Agreement took effect in 2016, decarbonization has become the global policy target instead of low carbon. We believe that this is a social requirement that affects the survival of humankind.

TOK is developing a system based on chemical looping as its new business, which can convert waste into items of value by using effluents as fuels, in addition to the collection of CO₂. We recognized that the visualization of benefits from environmental initiatives enhance motivation for development. Because the handling of high-concentration CO₂ involves hazards, we will promote development with due safety considerations as a player in the carbon neutral society.



TCFD-based Information Disclosure concerning Climate Change

TOK is striving for decarbonization to resolve climate change within the scope of its material issue of global environmental protection. In 2020, we analyzed the risks and opportunities on our business involved in climate change with the aim of disclosing information based on the Task Force on Climate-related Financial Disclosures (TCFD) recommendations. In 2021, we will analyze scenarios in accordance with the TCFD recommendations and promote information disclosure on the impact of climate change on our business.

Governance

TOK is coping with climate change issues by promoting environmental management and decarbonization measures within the scope of its material issue of global environmental protection. Our management executives discuss agenda items regarding EHS and the development and manufacturing of eco-friendly products, monitor the activities listed above, and formulate strategies in reference to current social issues and changes in the business environment.

Risk management

Under the risk management structure centering around the Risk Management Committee, which comprises the president and the general managers (**see pages 91–92**), we ensure the PDCA cycle of each activity and maintain continuous risk management, with the president and chief executive officer as the chief risk management officer.

Strategies (scenario analysis)

TOK has promoted scenario analyses on average temperature increases by the end of the 21st century by referring to the two-degree scenario presented by the International Energy Agency (IEA) and the four-degree scenario presented by the Intergovernmental Panel on Climate Change (IPCC). TOK sorted out the risks and opportunities for the entire group businesses both in the material business segment and in the device business segment (**see next page**). Both in the two-degree scenario and in the four-degree scenario, we re-recognized through the process above that it would be reasonably possible to enhance corporate value on a medium- to long-term basis by contributing to decarbonization while grasping abundant business opportunities in power semiconductors and by adequately responding to the expected physical risks and strengthening resilience.

Indicators and targets

TOK formulated the long-term environmental targets in 2020 to reduce energy-related CO₂ emissions (per base unit) by 15 points from the 2019 level by 2030. Calculation is in progress for the CO₂ emissions in 2030 (sum of Scopes 1 and 2) on condition of attaining both this target and the consolidated net sales target of 200.0 billion yen (**see pages 35–36**) in 2030.

Calculations are in progress for the financial impact (cost increase) resulting from the increase in CO₂ emissions in the event a carbon tax is introduced in Japan, the United States, China, South Korea, and Taiwan, where TOK has its manufacturing bases, by 2030*¹. We will examine flexible strategies in pursuit of a reduction of this possible cost increase, including the attainment of the long-term environmental targets ahead of schedule.

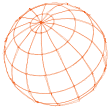
*¹ Estimation assuming USD 1 = JPY 100, and carbon tax unit price at USD 30 to 100 per ton, referring to the CDP *Carbon Pricing Corridors: The Market View 2018*.

Response to climate-related risks and opportunities (scenario analysis)

Risk type	Category	Risks on TOK business	Expected apparent time range*2	Key initiatives (countermeasures against risks)
Transition risks Mainly assuming the two-degree scenario	Policy and regulatory risks	<ul style="list-style-type: none"> ● Increase in costs due to carbon pricing (introduction of carbon tax and expansion of emission rights trading) 	Medium term to long term	<ul style="list-style-type: none"> ● Curb cost increases by accelerating the reduction of CO₂ emissions per base unit through shifts to more energy-efficient manufacturing equipment and increased use of renewable energy See pages 98–99
		<ul style="list-style-type: none"> ● Increase in costs for responding to more stringent policies and regulations to reduce CO₂ emissions in Japan and other countries where TOK has manufacturing sites 	Short term to long term	<ul style="list-style-type: none"> ● Take the necessary action without delay through careful information collection and negotiations with governmental agencies in each country, thereby coping with climate change as a member of related communities See pages 51, 98–99 and 104–108
Physical risks Mainly assuming four-degree scenario	Acute risks	<ul style="list-style-type: none"> ● Damage to facilities due to increase in natural disasters 	Short term to long term	<ul style="list-style-type: none"> ● Take continuous precautions for short-term flooding risks that have become apparent in the inundation of the Sagami Operation Center as our R&D hub by a typhoon in 2019 ● Emphasize BCP and resilience against natural disasters in the equipment renovation project under the next medium-term plan toward TOK Vision 2030 See pages 91–92, 100–101 See pages 37 and 52
	Chronic risks	<ul style="list-style-type: none"> ● Increase in costs for process temperature control and product temperature control due to global warming 	Short term to long term	<ul style="list-style-type: none"> ● Develop more efficient and cost-effective means and methods for the control of process temperatures and product temperatures See pages 98–99
		<ul style="list-style-type: none"> ● Increase in water stress due to global warming and difficulty in acquiring water resources 	Medium term to long term	<ul style="list-style-type: none"> ● Implement continuous measures to minimize water consumption in production activities and to maintain and improve effluent quality See pages 100–101

Opportunities	Expected apparent time range*2	Key initiatives (how to grasp opportunities)
Expansion of the power semiconductor market Assuming both two-degree scenario and four-degree scenario	Short term to long term	<ul style="list-style-type: none"> ● Stably supply and increase sales of g-Line and i-Line photoresists for power semiconductors ● Stably supply and increase sales of plasma ashing systems for power semiconductors ● Develop and increase sales of wafer handling systems for innovative power semiconductors See pages 42–43 See pages 42–43 and 69–70 See pages 42–43 and 69–70
Increase in needs for the development of next-generation power semiconductors with lower power consumption Assuming both two-degree scenario and four-degree scenario	Medium term to long term	<ul style="list-style-type: none"> ● Gear up development and sales of materials for next-generation power semiconductors, including Ga₂O₃ (gallium oxide) / SiC (silicon carbide) / GaN (gallium nitride) power semiconductors See pages 42–43
Increase in demand for energy recycling systems Assuming both two-degree scenario and four-degree scenario	Medium term to long term	<ul style="list-style-type: none"> ● Accelerate measures for development and sales of chemical looping energy recycling system See pages 53

*2 "Short term" is defined as until 2021, "medium term" as until 2030, and "long term" as until 2050.



Message from the Director in Charge of Marketing



We will promote sales and marketing activities on a short-term, medium-term to long-term, and super-long-term perspective in order to attain the overarching aspiration for 2030 to be inherited to becoming a 100-year company.

Kosuke Doi *Executive Officer,
Department Manager, Marketing Department*

Risks and opportunities

◆ Further advance and upgrade e-materials and identify risks and opportunities on a short-term, medium-term to long-term, and super-long-term basis

The global semiconductor market in 2020 stood at USD 440,389 million, up 6.8% from the previous year, with increased demand for PCs and tablets due to longer hours spent at home, expanded share of 5G smartphones, substantially greater data traffic on the Internet, and higher demand for infrastructural capital investment in cloud services, while the global economy was stagnant because of the COVID-19 infection*.

The semiconductor market in 2021 is expected to show positive growth by 19.7% from the previous year with most of the favorable factors above continued, as well as increased applications in automobiles, in addition to the gradual return to normal of global economic activities*. Furthermore, the transition to a phase that differs substantially from the past ten years is expected in the next ten years because of the dissemination of 5G communications, increased sensor demand, and expansion of autonomous vehicles, combined with the further increase in data use and semiconductor use in technological development toward the 6G next-generation communication standard. (There is an estimate that semiconductor wafer input will increase threefold from 2020 to 2030.) To fully understand these growth opportunities on a short-term, medium-term to long-term, and super-long-term basis, we will attain the overarching aspiration (qualitative aspects and quantitative aspects) under TOK Vision 2030 by further advancing and upgrading e-materials that are indispensable for the production of electronic components and semiconductors.

While the semiconductor supply chain has become a technological key in support of the advancement of society and human lives, there is an ongoing shift from global production to regional production of materials due to the escalating geopolitical risks of the U.S.-China trade friction. We recognize the protectionist policies across the world as future risks. Additional short-term risks are becoming apparent, and those risks include

delayed mass production starts and capital investments at customers caused by the increasing technological difficulty in the innovative semiconductor segment, decreased profitability due to the increases in the price of raw materials, and price competition for panel materials. There are also medium- to long-term risks of changing resist demand due to the silicon cycle, and the consequences of eating up semiconductor demand ahead of time. On a super-long-term basis, we will have to carefully identify the future areas of strengths in order to steadily and fully take advantage of business opportunities in optical semiconductors and quantum computer materials, which will play the leading role in the upcoming generations following 3D semiconductors.

* Source: World Semiconductor Trade Statistics (June 8, 2021)

Initiatives toward TOK Vision 2030

◆ Establish win-win relationships and promote strategic marketing toward the overarching aspiration (qualitative aspects and quantitative aspects)

Based on the recognition of risks and the potential opportunities as categorized above, the TOK Group will continue to implement customer-oriented strategies, aiming to *provide new added value that inspires customers* as the overarching aspiration (qualitative aspect) under TOK Vision 2030. The specific activities will include sales, marketing, and promotion in the state-of-the-art segments of EUV/ArF photoresists and high-purity chemicals for the miniaturization of semiconductors, as well as KrF excimer laser photoresists for 3D-NAND and high-density integration materials for 2.5D and 3D packaging. We will also gear up for the sales of materials for memory devices, image sensors, power semiconductors, and in-vehicle semiconductors as these markets expand driven by the fields above. We will further advance the customer-oriented strategies to establish win-win relationships with customers for any market and technological trends.

Our objective is to deepen and cultivate electronic material field as the most important strategy toward achieving net sales 200.0 billion yen, EBITDA 45.0 billion yen, and ROE $\geq 10\%$ as

the overarching aspiration (quantitative aspects) for FY 2030/12. Under this strategy, we pursue sustainable development by gearing up the growth-oriented approach, while breaking through the present difficulties, regarding upcoming market changes and unexpected risks as opportunities based on the thoroughly customer-oriented scenarios. As specific measures, we will strengthen initiatives to introduce cutting-edge, state-of-the-art technologies ahead of others, while reinforcing technical marketing for each product to grow trees while seeing the wood (i.e., having a big picture) through collaboration between the Strategic Alliance Division, which was established in 2020, and the Sales Strategy Division, which was organized in April 2021. Regarding miniaturization of semiconductors on a short-term basis, we will pursue growth in line with the ongoing customer-oriented strategies. In the meantime, we will also deepen the business areas and promote horizontal expansion by envisioning the upcoming next-generation semiconductor production technologies, grasping new needs that will provide a blue ocean ahead of others through technical marketing. To this end, we will explore future business styles and identify themes to pursue and core technologies to develop in order to expand semiconductor-related business areas, have future forecasts and resolve problems related to our products in advance, and upgrade and set in place TOK brands.

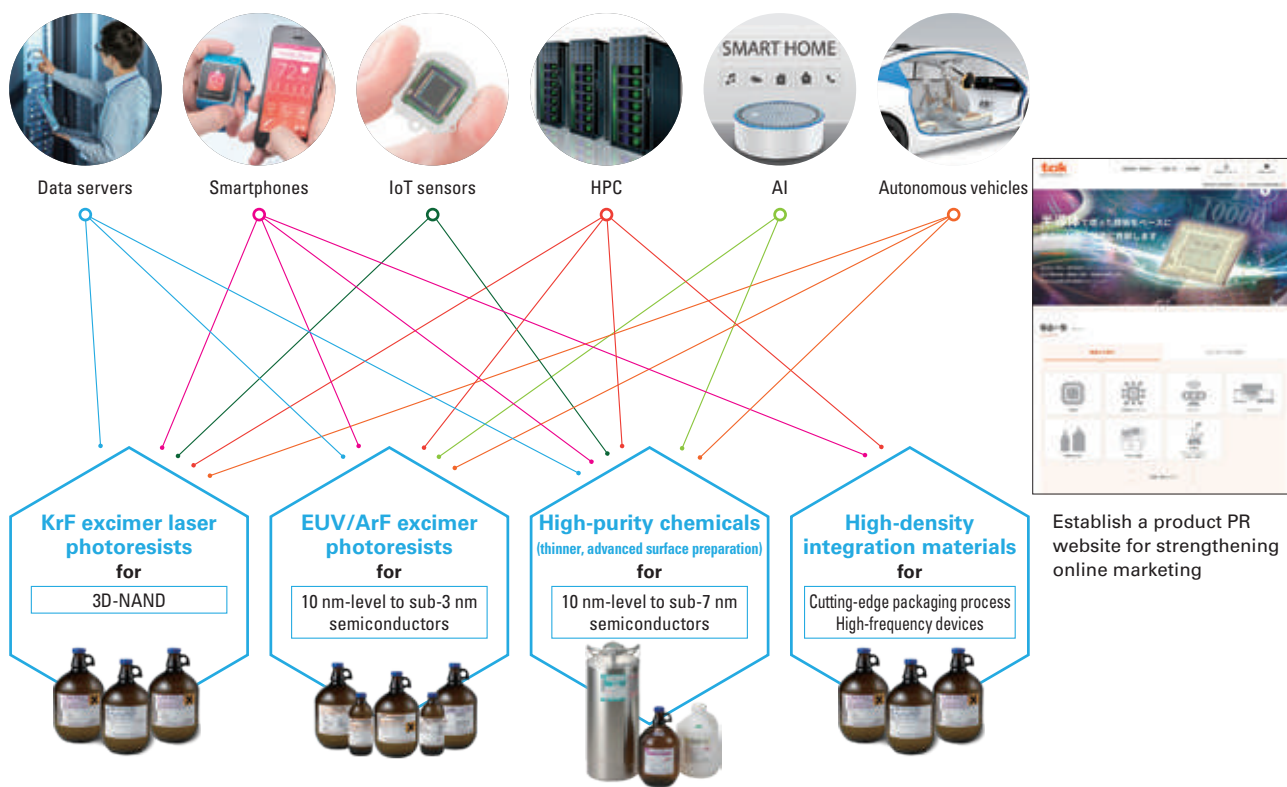
Regarding the deployment of new businesses from a super-long-term perspective to be inherited to become a 100-year

company in 2040, we will gear up marketing of the present new business products, such as life science-related materials, optical materials, and functional films, in collaboration with the New Business Development Department. At the same time, we will also promote marketing activities by envisioning the development of new businesses in the decarbonization, environment, and AI fields based on new collaboration with stakeholders and the exhaustive analysis of social trends, thereby crystallizing a new business portfolio.

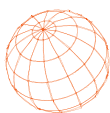
Enhance global brand power through the development of locally hired non-Japanese sales personnel and the promotion of diversity measures

The overseas sales ratio of the TOK Group has remained at around 80%. Therefore, we formulate and upgrade local-specific strategies based on the conditions of each customer-oriented site overseas in the implementation of sales and marketing strategies as described above. At the same time, we will strengthen collaboration with sites in Japan while continuously developing locally hired non-Japanese sales personnel and promoting diversity measures, so that all group employees can share the Purpose of TOK and provide higher value to customers and society, thereby enhancing our global brand power.

Value creation by TOK in innovative fields



Purpose
 Enhance the TOK brands by globally practicing
“contributing to a sustainable future through chemistry”



Message from the Director in Charge of Research and Development



We pursue long-term sustainable growth coupled with higher capital efficiency by further upgrading R&D efficiency and strengthening human resource development.

Harutoshi Sato *Director, Senior Executive Officer, Department Manager, Research and Development Department*

Risks and opportunities

◆ Achieve both consecutive growth and nonconsecutive growth to be inherited toward a 100-year company in 2040

TOK has developed as a long-running R&D-driven company that continues to target niche top markets. To achieve net sales 200.0 billion yen, EBITDA 45.0 billion yen, and ROE $\geq 10\%$ as the overarching aspiration (quantitative aspects) under TOK Vision 2030, we will steadily grasp business opportunities in the e-material field as the key battle ground for the next ten years, by continuously upgrading our world-leading high-purity processing technology and microprocessor technology as our core competences, under the management principle "Continue efforts to enhance our technology." In the cutting-edge areas with incessant fierce competition, we will win the competition and achieve consecutive growth by updating customer-oriented strategies.

In the e-material field, there are risks of technological obsolescence and commoditization in many product areas. We will expand future blue oceans by continuously acquiring and introducing new technological seeds through open innovation and cooperation with external stakeholders, thereby launching new R&D themes one after another.

Through these initiatives, the TOK Group will continue to create new added value and achieve both consecutive growth and nonconsecutive growth to be inherited toward becoming a 100-year company.

The diverse risks over the past ten years, such as the Great East Japan Earthquake, U.S.-China trade friction, and the COVID-19 infection, will definitely occur in the next ten years as well. We will overcome these risks by individual human resources thinking and acting autonomously toward the purpose of contributing to a sustainable future through chemistry and by leveraging the accomplishments of Company-wide Strategy 3: Strengthen human resources who can perform research, make decisions, and take the initiative under TOK Medium-Term Plan 2021.

Develop a keen awareness of R&D efficiency to improve capital efficiency and corporate value

◆ Always set an R&D efficiency target higher than the present level

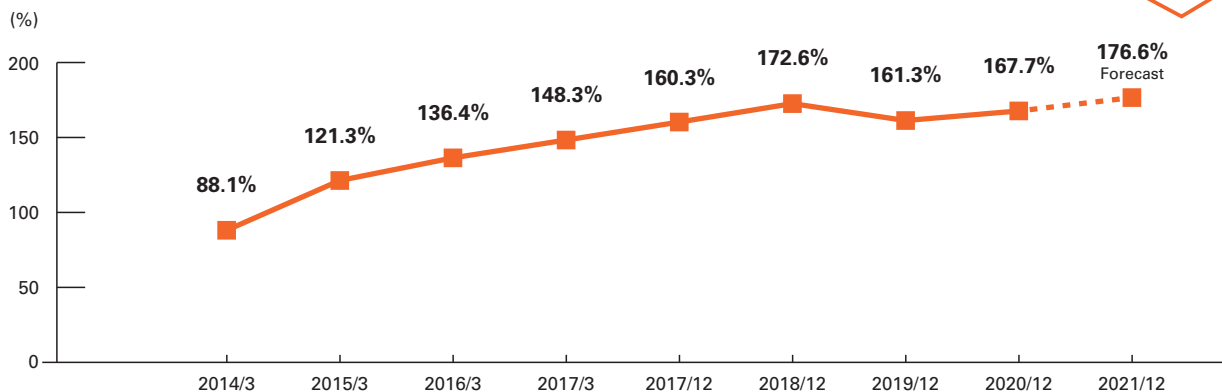
TOK is a top global niche company specializing in high-added value fields, and research and development are critical factors. We have continuously invested approximately 8% of net sales in R&D since 2010, including in the business structural reform period that followed the financial crisis in 2008. In this way, we have continuously reinforced our value creation basis in cutting-edge fields on a long-term perspective. In the product portfolio, the respective net sales of ArF and KrF photoresists increased more than twice over the past ten years. We also achieved high growth in the high-density integration materials segment, which was introduced as a blue ocean, making up for the decline in panel materials. We will continue to increase R&D investment in strategic segments in line with the increase in net sales, and we will further improve R&D efficiency so that the achievements of development will directly lead to improvement in capital efficiency and corporate value.

As specific measures, marketing will be emphasized by the R&D Department, just as in the Marketing Department, so that products with higher added value can be developed. We will also set, and aim at, a R&D efficiency target higher than the present level in each R&D project. Bearing this in mind, we will particularly focus on the following initiatives in FY 2021/12 as the final year of TOK Medium-Term Plan 2021 and toward TOK Vision 2030.



Aim to further improve R&D efficiency

Changes in R&D efficiency (five-year moving average)*



* R&D efficiency = Operating income over the past five years / R&D costs over the preceding five years

Initiatives toward TOK Vision 2030 in the R&D department

Further reinforce the R&D approach by exploring the essence

To improve R&D efficiency, we will reinforce the R&D approach to a higher level. Rather than depending on existing patterns and formulas that have been acquired through trial and error in the material design and synthesis processes or in product development, we will continuously return to the materials to examine their chemical structures and reaction mechanisms, exploring the essence of the mechanisms through questions as to why a certain phenomenon occurs and how a certain property can be improved. By doing so, we will infiltrate autonomous thinking to explore why certain factors are favorable, while others are unfavorable. In this way, we will promote the development of next-generation products in the same product areas, while strengthening capabilities for new R&D themes.

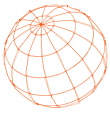
Strategic use of computational chemistry, data science, and AI/MI

We will strategically use computational chemistry and data science to enhance knowledge productivity (efficiency of outputs gained through information inputs) through expedited PDCA cycle in the R&D approach. In the hypothesizing process to attain the requested product performance (functional definition), the analysis of historical data can be streamlined with data science, AI, and materials informatics (MI). The hypothetical forecasting efficiency will be increased with computational chemistry by using specified parameters and surrogate indexes. Efficiency will be improved in the processes from material design and synthesis and sample formulation to discussions and transition to the next process by leveraging data science and AI/MI. Computational chemistry will be effectively

used for the testing of hypothesis in the processes above by improving the precision of computational chemistry through feedback from the analyses of parameter/surrogate indexes and the evaluation of sample performance.

Develop R&D human resources and hand down individualistic knowledge and know-how

TOK will continue to use AI/MI in the pursuit of higher R&D efficiency. The quality of outputs from AI/MI substantially depends on the initial data setting based on the individualistic knowledge and expertise of R&D human resources. Our business model is based on the customer-oriented strategies inherited since our founding and is rooted in interpersonal communications. We will continue to develop human resources with a strong faith and passion who are capable of persistently exploring the essence of things, taking proactive action and accepting challenges, establishing partnerships through communication with others, and continuously learning, changing, and growing under the policy of the Research and Development Department to develop human resources who can perform research, make decisions, and take the initiative. At present, the two executive fellows appointed in 2020 are leading the respective development teams focused on human resource development and sharing individualistic expertise. To steadily grasp business opportunities in the semiconductor industry that will expand to horizons substantially differing from the past ten years, we will also increase non-Japanese employees and mid-career recruits toward the overarching aspiration under TOK Vision 2030.



Message from the Director in Charge of General Affairs and Human Resources



We pursue happiness in personnel and strengthen their engagement, considering social changes and emerging global risks.

Kunio Mizuki *Director, Executive Officer,
Department Manager, General Affairs Department*

Risks and Opportunities

◆ Coping with present risks while strengthening personnel measures from the medium- to long-term viewpoints

The source of our competitiveness is in the microprocessor technology and high-purity processing technology as our core competence, and the production engineering power that stably achieves high quality. While these technologies are naturally supported by human resources, the decreasing working population has emerged as a risk in Japan where TOK is headquartered, and it has become an urgent requirement to implement personnel measures that will invigorate incumbent employees and senior employees. Therefore, we have endeavored to introduce a new personnel system in 2021, envisioning the medium- to long-term growth of human resources and the Company under the concepts of diversity, fairness, and accent. The implementation of the overall system was postponed by one year to 2022 because we prioritized the introduction of new work styles amidst the spread of COVID-19 in 2020 in order to prevent both getting infected and infecting others, putting the safety of stakeholders such as employees, customers, and business partners first. The re-employment system will also be introduced in concurrence with the new personnel system, performing revision to further motivate and leverage senior human resources. We regret the delay in these systems, but ideas have been presented to further enhance them during this delay. We are also relieved to have avoided the confusion of supply chain caused by the interruption of the supply of our products, and have also minimized COVID-19 infections in TOK. We will continue to implement infection control measures and fulfill our social responsibility without becoming complacent (see page 93).

◆ To establish global personnel management

The U.S.-China trade friction and the global competition for data sovereignty have continued from the pre-COVID-19 era into the present. In addition, the risk of depending on specific regions, such as Asia for semiconductor production emerged in 2020, due to the tight supply-demand conditions for automotive semiconductors and the confusion of supply chain caused by devastating natural disasters. Consequently, semiconductors were positioned as strategic supplies in countries and regions, and the

Policy on Utilizing Human Resources

Since its founding, employees have been the greatest asset of the TOK Group. The Company's human resource policy is based on the following five principles, derived from its long-held philosophy that human resources are a company asset.



- Never forget that business always starts with people.
- Any discrimination within the Company and among employees is strictly prohibited.
- Ensure full compliance with applicable laws and regulations, as well as fair and equal compensation.
- Educate personnel and promote creativity to become a company that develops innovative technologies.
- Ensure personnel systems are based upon performance, emphasizing and ensuring transparency.

shift to domestic production is proceeding in full scale, while the competition for recruitment is intensified in related industries.

“Cross-border recruitment and personnel development regardless of nationality” as our global personnel strategy could not be implemented as scheduled due to the COVID-19 pandemic in FY 2020/12. However, we plan to accept long-term internship from overseas, to input globally hired engineers into cutting-edge projects and training programs in Japan, and to increase global employments, expecting improved circumstances through the progress of vaccination worldwide in FY 2021/12.

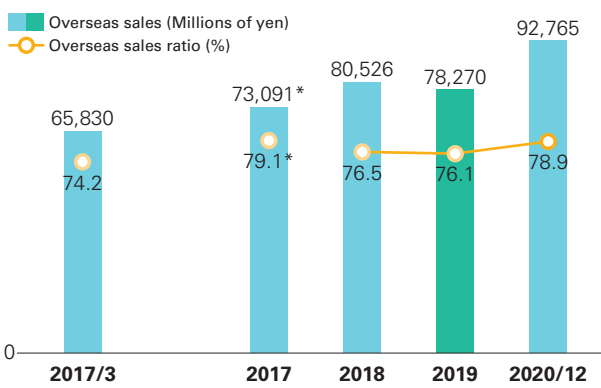
◆ Ideas for personnel development in the COVID-19 pandemic

In the development of domestic human resources, we emphasize the provision of occasions for direct exchange with customers in the U.S., South Korea, Taiwan, and China, the leading regions of the semiconductor industry, to many domestic employees who seek opportunities for growth. In FY 2020/12, these occasions were partly replaced with modified domestic training programs, because overseas traveling was restricted. Specifically, a cross-departmental training was added to acquire multi-faceted and broad perspectives. In particular, contact with customers at the sales department as the training site was introduced as a part of tough assignments, thereby promoting the growth of personnel. We will continue to implement such ideas, and will further increase opportunities for growth at overseas sites after the COVID-19 pandemic subsides.

History of Overseas Subsidiary Development

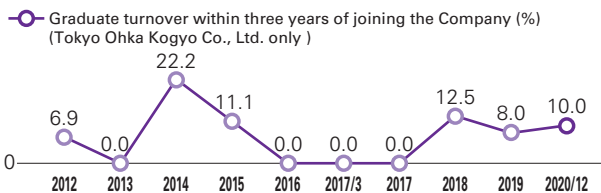


Overseas sales/overseas sales ratio



* The fiscal year ended December 31, 2017 was an irregular nine-month period in Japan and 12 months overseas due to a change in the fiscal year-end.

Graduate turnover within three years of joining the Company



Key Measures in the TOK Medium-Term Plan 2021

➤ Toward the introduction of a new personnel system

Under the TOK Medium-Term Plan 2021, which emphasizes the enhancement of personnel measures more than any medium-term plans in the past, we have striven to formulate a new personnel system in order to strengthen human resources who can perform research, make decisions, and take actions on their own initiative as one of the company-wide strategies. The system was formulated considering the results of the employee engagement survey conducted in 2019, and aims at shifting to a mission grade system, which clarifies the roles and responsibilities required in each course, rank, and job type, and provides treatment and remuneration proportionate to the achievement level. The system also features treatment focused on the specialty of each employee in the R&D department and elsewhere by enhancing a specialist system, reviewing criteria for managerial appointments, and introducing a fellow and executive fellow system.

Since FY 2020/12, we have focused on upgrading systems, including the reform of human resource development methods, and work-style reform for each employee to maximize their

Main features of the mission grade system (to be introduced in 2022)

Structures/Systems

- Course and rank system**
 - Shift to mission grade system for both management and general courses
 - Renew rank definitions by clarifying the expected roles according to rank and job type, making them well understood
 - Review criteria for managerial appointments
- Remuneration system**
 - Shift to a mission grade system
- Evaluation and promotion system**
 - Daily work evaluation changed to "Behavior evaluation"
 - New rank definition set up as an item and standard for "Behavior evaluation"
 - Introduction of a demotion system for management
- Education system**
 - Establish a new level-based education system for management level employees
 - Expand the education at each level

individual abilities. Specifically, we have introduced 360-degree feedback on the heads of departments and implemented awareness improvement and coaching seminars to develop them as the core of human resource development and the invigoration of organization. For work-style reform, we have analyzed the benefits and disadvantages of work from home, flextime, and staggered commuting in order to ensure the safety of employees and infection prevention in the COVID-19 pandemic, and promoted vigorous discussion toward the introduction of these styles as permanent measures. As the results of various measures, not only female employees, but also increasing male employees are taking childcare leave in recent years. We will continue endeavoring to establish a comfortable work environment.

➤ To increase the ratio of female managers and to promote the appointment of non-Japanese human resources

To contribute to a sustainable future and to achieve decarbonization as stated in the management vision, it is essential to lead innovation utilizing diverse values and specialties. Therefore, the TOK Group continues to maintain the diversity and inclusion* policy, and proactively promote women in the workplace and the appointment of non-Japanese employees.

The ratio of female managers remained at the same level in FY 2020/12, but a woman was appointed as General Manager of the Human Resources Division, and there was also an increase in the candidates for female managers. In addition, the ratio of female employees in recruitment has been around 40% over the past several years, compared to our target of 20% or higher. This also seems to demonstrate the steady advancement of initiatives to increase the ratio of female managers. In FY 2021/12 as the final year of the medium-term plan, we will practice ideas for motivating female employees to challenge management positions, considering and pursuing their careers from their perspectives, such as providing occasions for exchange with female human resources who can play a role model.

The number of non-Japanese employees increased again in FY 2020/12. In FY 2021/12, we will promote the appointment of non-Japanese human resources and the advancement of diversity through new ideas, such as more invigorated human resource exchange among the group companies by utilizing overseas subsidiaries.

* Inclusion: Acknowledging and taking advantage of the skills and opinions of diverse human resources

Indices related to female employee participation*1

	2017/3	2017	2018	2019	2020/12
Ratio of women among new hires (%)	45.8	29.2	43.3	39.4	38.5
Ratio of women among the overall employees (%)	11.4	11.7	12.3	13.0	13.7
Difference in average tenure figures for men and women (years)	8.7	8.9	9.2	9.3	9.1
Ratio of women in senior and middle management (%)	1.5	2.0	2.4	3.3	3.2
Ratio of women on the Board of Directors (%)	8.3	8.3	8.3	7.7	7.7*2

*1 Tokyo Ohka Kogyo Co., Ltd. only (employees exclude those seconded from TOK to other companies and contract workers, but include people seconded from other companies to TOK)

*2 The ratio of women on the Board of Directors is as of 2021. The ratio decreased in 2019 and after because one independent director was added.

Number of users of childcare-related systems*

	2017/3	2017	2018	2019	2020/12
Childcare leave system (number of users)	4	4	12	16	19
Shorter working hours (number of users)	2	2	6	13	12
Childcare time (number of users)	12	12	13	16	16

* Tokyo Ohka Kogyo Co., Ltd. only

Number of non-Japanese employees

	2017/3	2017	2018	2019	2020/12
Number of non-Japanese employees (Tokyo Ohka Kogyo Co., Ltd. only)	11	11	11	16	18
Number of non-Japanese employees (consolidated)	312	323	378	412	424
Ratio of non-Japanese employees (consolidated, %)	19.5	20.0	22.6	23.9	24.2

Initiatives toward TOK Vision 2030

◆ Toward the provision of solutions that lead to the creation of new value for customers

TOK Vision 2030 presents “Utilizing global personnel” as one of the seven strategies in 2030 with a view to a 100-year company in 2040. We define global human resources as those who can make accomplishments under any circumstances, and enhance solutions that lead to the new value creation for customers by developing human resources and organizations envisioning 10 years ahead, and promoting diversity and inclusion to form the basis for leveraging the developed human resources and organizations.

In the development of human resources and organizations, we will establish organizations utilizing a human resource database and talent management system that visualizes the skills and abilities of employees under the new personnel system, and pursue career development through dialogs based on human resource development sheets, while utilizing development tools that focus on the strengths of each individual.

For diversity and inclusion, relationships with overseas sites will be further enhanced, and the development of locally hired staff will be strengthened through training and transfers.

◆ Producing leeway for creation by improving both happiness and productivity

In addition to the personnel measures above, the Seven Management Strategies stated in TOK Vision 2030 require higher employee engagement for their practices. Therefore, we will continue to pursue the enhancement of happiness, while improving productivity at the same time. By promoting these two factors in tandem, we will make each individual produce leeway for creation, thereby further advancing a frank and open-minded business culture as one of the management



Dialog sessions between young employees and the President

principles since the foundation. The specific focuses are placed on fostering sympathy with the Vision, generating the sense of fulfillment, establishing a comfortable work environment, and supporting growth. In fostering sympathy with the Vision, the management executives communicate the details of TOK Vision 2030 in their own words through dialog with employees. In generating the sense of fulfillment, we will motivate capable employees by providing stages for further empowerment.



Motoko Samezawa
General Manager,
Human Resources Div.

Higher engagement will be the common language

The new personnel system places the pursuit of happiness in personnel at its basis, and emphasizes that individual employees can feel the sense of fulfillment and pleasure in their work. To achieve higher engagement as an important element of happiness, the management executives have led the analysis and discussion on the results of the employee engagement survey and have formulated and implemented improvement measures in each department. In FY 2020/12, we also promoted the company-wide sharing of initiatives in each department. In the coming years, we will continue fixed-point observation of all global employees by the survey method used in 2019, thereby pursuing increased happiness for all employees in Japan and overseas, with higher engagement as the common language throughout the group.

Respect for Human Rights

◆ Established the Human Rights Policy

The TOK Group has announced that it would never violate any human rights in the TOK Group Human Resources Management Regulations and the TOK Group Compliance Standards of Conduct. In October 2020, we formulated the CSR Policy, which is applicable to the entire TOK Group, by reorganizing the existing policies, Compliance Standards of Conduct, and other policies. As its subordinate policies, we also formulated the Human Rights Policy based on the Universal Declaration of Human Rights, the Guiding Principles on Business and Human Rights, ISO 26000, the Responsible Business Alliance (RBA) Code of Conduct, and other guidelines.

In FY 2020/12, we implemented study sessions and e-learning related to human rights. In FY 2021/12, we will educate and promote understanding in order to instill the CSR Policy including human rights policy throughout the group.

◆ Prohibition of child labor and forced labor

The human rights policy clearly states that the TOK Group prohibits child labor, forced labor, bonded labor, and human trafficking, regardless of employment status. We have also promoted initiatives covering the entire supply chain, including the statement of procurement considering human rights, occupational health and safety, and other social requirements in the CSR Procurement Policy.

◆ Prevention of harassment

The human rights policy states that the TOK Group prohibits all kinds of activities that may be regarded as harassment. Furthermore, we codified the detailed rules concerning harassment, which specified contact information and procedures for handling harassment incidents. We strive to prevent all kinds of harassment by improving employee awareness through continued harassment prevention education for all employees as part of human rights training. In coming years, we also plan to implement study sessions on harassment for directors and other executive officers so that they can embody the frank and open-minded business culture stated in the management principles, and set an example of appropriate behavior.

We have also made rules for preventing maternity and paternity harassment as an example of initiatives to promote the prevention of new types of harassment in line with social trends. In addition, we will implement measures to help external stakeholders deepen their understanding of the TOK Group CSR Policy, including the human rights policy.

Ensuring the Health and Safety of Human Resources

◆ Continued initiatives for health & productivity management

Since 2015, TOK has implemented Data Health Plans in collaboration with the Tokyo Ohka Kogyo Health Insurance Associations, which uses the PDCA cycle for maintaining and improving health in order for officers and employees to prevent and discover diseases. We have implemented various insurance measures, including offering to pay the full cost of group influenza vaccinations for employees since 2017. We have also focused efforts on preventing illnesses from becoming worse through the early detection and treatment of diseases. In 2018, the Company launched My Health Web as a convenient portal for improving knowledge and awareness about health. We also hold the walking rally via My Health Web with the participation of the president, as well as many officers and employees. We have also made efforts to maintain presymptomatic state to lead healthier lives by encouraging each director and employee to do daily radio calisthenics, stretching, and activities on internal athletic clubs. Since 2019, we have been holding quit-smoking seminars, introduced humidifiers, and power assist suits for elderly workers.

As a result of these ongoing initiatives, TOK was recognized in the 2020 Certified Health & Productivity Management Outstanding Organizations Recognition Program by the Ministry of Economy, Trade and Industry and Nippon Kenko Kaigi in February 2020 for a third consecutive year. We have introduced

Human Rights Policy

TOK Group respects the basic human rights and diversity, and acts as a good member of the global community in accordance with national and local laws and social norms* related to human rights.

* Universal Declaration of Human Rights, Guiding Principles on Business and Human Rights, ISO26000, RBA Code of Conduct, etc.

- Does not discriminate against anyone in recruiting, hiring, assignment, training, reward, promotion, etc., on the basis of birth, nationality, race, ethnicity, religion, gender, sexual orientation, marital status, pregnancy, medical condition, age, disability, or any other basis prohibited by law.
- Prohibits child labor, forced labor, debt bondage, and human trafficking regardless of the form of employment.
- Prohibits any and all acts that may be considered harassment.
- Endeavors to foster and implement fair and impartial treatment of our human resources.
- Maintains a physically and mentally comfortable working environment by ensuring the fairness in employment and the safety at work.
- Respects and guarantee the basic rights of workers stipulated in international labor standards and the constitutions and labor laws of each country and region.
- Properly protects and manages personal information.

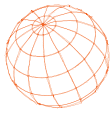
new initiatives toward future certification, thereby promoting further health and productivity management. In December 2020, TOK was designated a “Sports Yell Company” by the Japan Sports Agency for a second consecutive year.



◆ Discussing personnel system and work-style reform at the labor-management review panel

The Tokyo Ohka Kogyo Labor Union was formed in 1976, and belongs to the Japanese Federation of Textile, Chemical, Food, Commercial, Service and General Workers' Unions (“UA Zensen”). The Tokyo Ohka Kogyo Labor Union has a union shop agreement with the Company. As of December 31, 2020, there are 1,072 labor union members affiliated with the Company, and 80.1% of all employees are members of the labor union. Since the labor union was first formed, labor and management have maintained good, cooperative relations. Once every two months, the central labor-management meeting is held to exchange opinions on the operating environment and other labor-management issues. As a part of this process, we have concluded various labor agreements that include provisions on occupational health and safety for maintaining good labor and workplace conditions. When changes in working patterns are made for business purposes, they are always discussed in advance with the labor union.

We have also established the labor-management review panel as a forum for labor-management discussion on the new personnel system and re-employment system to be introduced in 2022, among other topics. We have traditionally discussed proposals from the labor side and the management side at the respective specialized committees. In contrast, the labor-management review panel is operated as a consultative body that not only discusses the systems above but also shares requirements toward work-style reform, as well as the awareness of problems toward workplace environment where motivated senior human resources can fully exercise their abilities, and examines solutions thereto.



Review of Operations

Material Business

Manufacturing and sales of electronic functional materials and high-purity chemicals



Kosuke Doi

Executive Officer, Department Manager,
Marketing Department

VALUE



Material Business



TOK Taiwan Co., Ltd.



TOK Advanced Materials Co., Ltd. (South Korea)

Material Business Performance

(Millions of yen)

	FY 2018/12 Result	FY 2019/12 Result	FY 2020/12 Result		
				Change	%
Net sales	102,621	98,986	114,773	+15,787	+15.9%
Electronic functional materials	58,793	58,249	65,878	+7,629	+13.1%
High-purity chemicals	43,733	40,674	48,732	+8,058	+19.8%
Other	95	63	161	+98	+154.7%
Operating income	14,765	13,462	20,395	+6,933	+51.5%
Operating margin	14.4%	13.6%	17.8%	—	—
Segment assets	104,125	113,079	119,695	+6,616	+5.9%
Depreciation and amortization	6,852	7,009	6,518	(491)	(7.0%)
R&D costs	7,856	8,370	9,093	+723	+8.6%

Risks and opportunities—Material Business—

Risk

- Rising cost of development due to increasing technological difficulties
- Unfavorable market environment due to the escalating geopolitical risks that include the U.S.-China trade friction
- Interruption or confusion of supply chain due to the increased climate change risks and infectious disease risks
- Increased investment outlays for inspection and production equipment in connection with ultrahigh purification
- Impact of higher costs of equipment following advances in exposure equipment and miniaturization
- Impact of decrease in customers, with the same number of photoresist manufacturers
- Impact of over-concentration of main business domains in the electronics industry

Opportunities

- Increasing needs for ultra-miniaturization (EUV and ArF photoresists)
- Growing needs for cutting-edge packaging technologies (2.5D, 3D semiconductor packaging)
- Further increase in data volume and semiconductor needs due to 5G, IoT, and AI
- Increase in semiconductor needs due to the accelerated global initiatives for decarbonization
- Expansion in business opportunities through the global structure of close relationships with customers (in Japan, the U.S., South Korea, and Taiwan), and multi-site systems at major customers
- Capture growth opportunities through strengths in both the front-end process and back-end process of semiconductor manufacturing
- Increase in proposal opportunities for semiconductor manufacturing processes due to further diversified needs in both materials and equipment (synergies with Equipment Business)

Issues for Society and Customers and TOK's Solutions

Contribute to innovation by achieving the combination of high performance, high quality, and stable supply

In addition to conventional functionality as the heart of electronic equipment, semiconductors have become essential supplies for leading innovation and for resolving highly complex social issues that face humankind, such as the climate change risks and infectious disease risks that have recently become apparent.

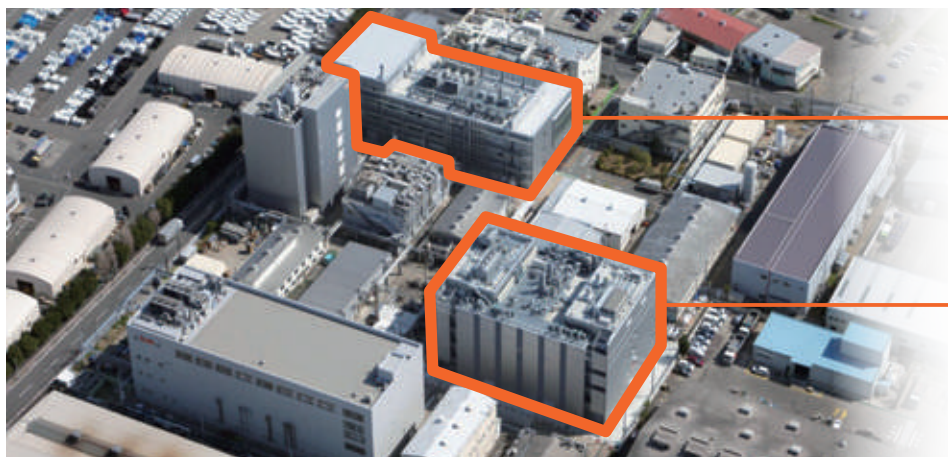
We consider this the mission of the semiconductor-related industries, including TOK, to contribute to achieving the higher performance, downsizing, lower power consumption, and cost reduction of electronic equipment by continuously upgrading microprocessor technology and laminating technology to achieve the increased processing speed and lower power consumption of semiconductors.

High performance, high quality, and a stable supply must be achieved in combination, particularly for semiconductor materials like photoresists and high-purity chemicals. We make continuous efforts to improve performance and develop new applications for all key products including EUV/ArF/KrF/i-Line photoresists. At the same time, we will strive to ensure a stable supply by developing production technologies that achieve high quality in the mass production process, and taking BCP measures, among other efforts.

Key to high product quality—defect reduction by reducing invisible impurities

Major factors in the selection of EUV photoresists and other materials used in innovative semiconductor segments are high quality with minimized impurities, combined with high performance sensitivity and resolution. In the super clean room that started operation in the New R&D Building at the Sagami Operation Center in 2019, the entry of foreign matter from outside is minimized to handle hazardous substances with the world highest-level cleanliness, thereby enabling the identification of the source of impurities in shorter hours than before. In the cutting-edge miniaturization process, even fine impurities that cannot be observed with inspection instruments lead to compromised yields. Therefore, we implement diverse measures to detect and reduce such impurities. These measures to reduce defects are promoted while establishing logical processes through the collaboration of the Manufacturing Department, Marketing Department, and Research and Development Department in accordance with the long-term road map toward zero defects.

(see page 67, "The Cutting Edge")



New B-6 Building

New C-1 Building

The new C-1 Building of the Sagami Operation Center, where the super clean room to handle hazardous substances has started operations, and the new B-6 Building for open innovation



The Cutting Edge



Jung WonKyu

Manufacturing Team
TOK Advanced
Materials Co., Ltd.

TOK
Human
Resources

The personnel in South Korea are also continuously upgrading quality in response to ever-escalating customer requests.

We make everyday efforts to ensure high-quality and stable production because the mass production of EUV photoresists has begun in full scale to support the cutting-edge process of semiconductor miniaturization.

While the product quality and technological difficulty required by customers are extremely high, we impartially introduce findings from both South Korea and Japan and establish a production environment under the optimal conditions through the repeated cycle for quality improvement, proceeding from risk identification to testing and then to improvement, thereby achieving customer satisfaction and high evaluation. We doubled our production capacity by abundantly introducing state-of-the-art equipment, fully preparing ourselves for the next leap.

We will continuously upgrade quality in response to ever-escalating customer requests.

Initiatives for Material Issues: Creation of New Added Value that Contributes to Innovation and Global Environmental Conservation

Provision of solutions that lead to the creation of new value for customers

We have specified the *creation of new added value that contributes to innovation* as one of our material issues. Through rigorous marketing, TOK will carefully identify and intensively and proactively address solutions that lead to the creation of new value for customers as a requirement and objective for this material issue. Many achievements were made in FY 2020/12. One of them was the development of a photoresist for sensor devices.

TOK developed and provided photoresists for CMOS image sensors used in smartphone cameras. Last year, we developed and marketed a photoresist for the ToF (Time of Flight) sensor, which applies the CMOS image sensor.

The ToF sensor measures distance based on the time between the emission of a signal and its return after reflecting off an object. The market will expand while substantially improving face recognition accuracy on smartphones and contributing to the realization of a camera that can photograph objects in low light.

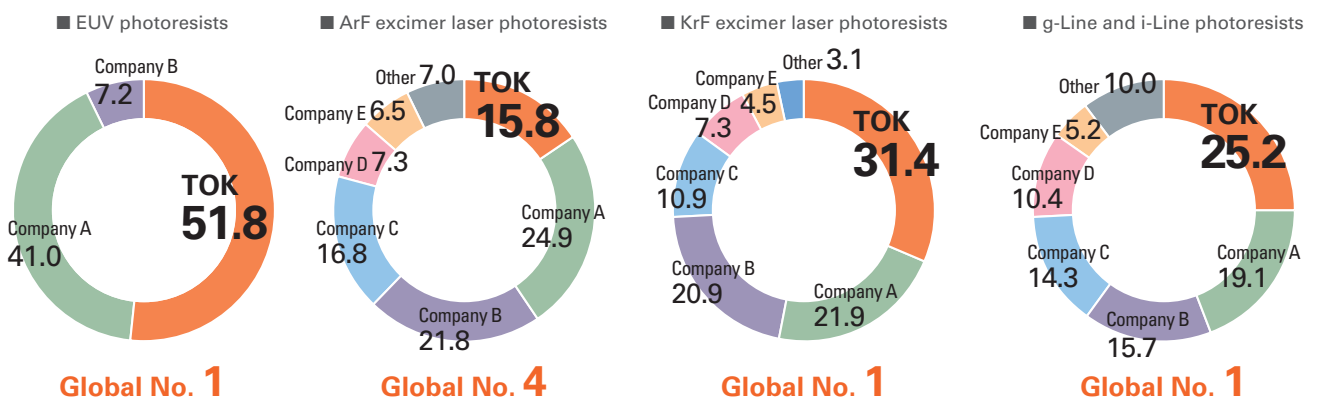
Expected increase in businesses that combine further improvement of customer satisfaction and promotion of environmental management

In FY 2020/12, the awareness of social sustainability rose through the aggravation of climate change risks and the impact of the COVID-19 pandemic. Among the components of product added value in B2B business, low environmental and health impact was considered as important as, or even more important than, high product performance and characteristics.

TOK promotes environmental management as one of the key initiatives for the material issue of global environmental conservation. We have ensured strict compliance with environmental regulations applicable to our products and have proactively responded to new environmental regulations. In FY 2020/12, we received requests from many customers to shift from existing products to models with reduced environmental and health impact. We developed and provided new products that satisfied required standards, and had them introduced by the customers.

We will continue to promote businesses that combine the further improvement of customer satisfaction and the promotion of environmental management, thereby contributing to the sustainable development of society.

Global market share for semiconductor photoresists (projected shipment volume share in 2020)



Source: Fuji Chimera Research Institute, "Current Status and Future Outlook of Cutting-edge/Noticeable Semiconductor-related Markets 2020"



The Cutting Edge

Development of cutting-edge materials leveraging super clean room

The high-purity processing technology is one of our core competences that contributed to the resolution of social issues in each era since the founder, Shigemasa Mukai, developed high-purity potassium hydroxide in 1934 and broadly distributed it as an essential material for batteries used in cap lights to protect the safety of coal miners. To continue upgrading this strength under the management principle "Continue efforts to enhance our technology," we started the operation of the super clean room in 2019 to handle hazardous substances with the world highest-level cleanliness, striving to reduce impurities to the ppq* level in the cutting-edge areas of semiconductor photoresists and high-purity chemicals.

* ppq = parts per quadrillion

Pursuing material quality from three perspectives

In the pursuit of the quality of cutting-edge materials using high-purity processing technology, we emphasize an approach from three perspectives: fluctuations in raw materials (e.g. impurities, metals), fluctuations in the production process (e.g. refinement, mixing, filtration, filling, containers, equipment), and fluctuations in analysis and evaluation (e.g. analysis containers, implementation methods). Among these, the super clean room plays an important role in the factor analysis and improvement of fluctuations in the production process.



New C-1 Building of the Sagami Operation Center, where R&D is promoted in cutting-edge areas centering around the super clean room to handle hazardous substances

Company-wide promotion of the *trinity* of manufacturing, development, and sales as one of the most important managerial requirements

TOK considers the further advancement of high-purity processing technology as one of its most important managerial requirements. The relevant strategies and policies are continuously discussed at the *trinity* meeting comprising the president and the directors in charge of manufacturing, development, and sales. Frontline staff also closely collaborate, rapidly sharing the development condition, customer condition, industrial condition, etc. The Production Technology Development Division functions as the core of the manufacturing process. The department aims to develop production technology required for next-generation products, logically verify the technology, and launch mass production, in addition to identifying the quality requirements for next-generation products in advance and incorporating them in the prototyping stage and leads company-wide efforts to attain these goals.

Started to provide next-generation cutting-edge resists leveraging super clean room

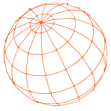
Our customer-oriented strategies have been further upgraded through the initiatives above, enabling the rapid sharing of customer condition and industrial conditions among the development, sales, and manufacturing departments in Japan and overseas. In this way, it has become possible to undertake proactive and systematic R&D activities forecast customer requirements, and we have started to provide the next-generation cutting-edge resists of higher quality.



Akiyoshi Yamazaki
Deputy Department Manager,
Manufacturing Department

Aiming at the next stage through DX and advanced collaboration with stakeholders

A subtle difference in raw materials or production process has a substantial impact on quality in the development and manufacturing of next-generation materials for innovative semiconductor segments. We will not only analyze our internal data but also establish advanced collaboration with suppliers, customers, and other stakeholders, while aiming to realize quality forecast based on AI and statistics in the future. To this end, we will promote the analysis of process parameters that substantially affect product quality, utilizing the super clean room. At the same time, we will establish an R&D structure for next-generation production technology through a continued DX shift.



Review of Operations

Equipment Business

Manufacturing, sales and maintenance of semiconductor manufacturing equipment and panel manufacturing equipment



Tsukasa Honkawa

Officer, Department Manager,
Process Equipment Manufacturing Department



Shonan Operation Center

VALUE



Equipment Business



Equipment Business Performance

(Millions of yen)

	FY 2018/12 Result	FY 2019/12 Result	FY 2020/12 Result		
				Change	%
Net sales	2,655	3,833	2,811	(1,022)	(26.7%)
Segment income (loss)	(883)	(286)	(310)	(24)	—
Operating margin	—	—	—	—	—
Segment assets	4,245	3,612	2,015	(1,597)	(44.2%)
Depreciation and amortization	63	36	32	(4)	(11.1%)
R&D costs	497	509	452	(57)	(11.2%)

Risks and opportunities—Equipment Business—

Risk

- Impact of intensifying competition with full-scale entry by major companies as competitors catching up
- Unfavorable market environment due to the escalating geopolitical risks including the U.S.-China trade friction
- Introduction of high integration processes aside from 3D packaging

Opportunities

- Expansion of growth opportunities in the 3D packaging market following diversification of high integration technologies
- Increase in semiconductor needs due to the accelerated global initiatives for decarbonization
- Expansion of business opportunities in the next-generation display market
- Opportunities for adoption are relatively equally obtained as the market is new
- Increase in opportunities to appeal track record in TSV equipment adoption and advantage in technology and technological improvement
- Expansion of business opportunities through the supply of high-performance equipment for coating and stripping using knowledge of materials developed in the Material Business
- Securing of earning opportunities leveraging lower break-even point thanks to the fabless production method

Issues for Society and Customers and TOK's Solutions

Support for the long-term development of semiconductor technologies

Semiconductors have contributed to the realization of convenient and comfortable lifestyles around the world, as well as to the resolution of diverse social issues. Over approximately 50 years, they have achieved higher speed and larger capacity through performance upgrading based on miniaturization. Now that miniaturization is slowing, initiatives are expanding to achieve higher performance through other methods. In particular, the 3D packaging technology to vertically stack semiconductors is expected to support the long-term development of semiconductor technologies.

The TOK Group marketed the 3D packaging system called Zero Newton® in 2008 and has increased sales and acquired market share particularly among the OSAT* manufacturers in Asia. We have also accumulated profound knowledge in this field based on the Materials & Equipment (M&E) strategy unique to TOK, which operates both the material business and the equipment business. Owing to the continued promotion of customer-oriented strategies, we are receiving increased inquiries based on lamination needs in the cutting-edge packaging area. We will therefore continue to strengthen businesses in this segment and promote the M&E strategy.

* Outsource Assembly and Test: A business model for undertaking only production of semiconductors that specializes in the back-end processes

Steadily grasp the increasing needs related to decarbonization

The 3D packaging system Zero Newton® has been highly rated for its core technology to attach and separate the wafer and the carrier substrate and has been introduced by the manufacturers of high-efficiency high-performance power semiconductors that contribute to decarbonization. In particular, innovative power semiconductor wafers are thinned to below 100 um, making them very difficult to attach and separate. Moreover, there is also a need to increase yield by widening the wafer diameters. Since Zero Newton® offers superior performance for both of these objectives, we will focus on expanding sales of the product going forward.

Another flagship product for power semiconductors that has been used by customers and has maintained steady sales for many years is the plasma ashing system. We will endeavor to acquire replacement needs by proposing a lower-cost version and to increase orders by responding to the need for larger-size wafers, while emphasizing the appeal of the high resist-removal capacity unique to TOK.

TOK's 3D packaging system Zero Newton® and plasma ashing system



Zero Newton® bonding machine



Zero Newton® debonding machine



Plasma ashing system



The Cutting Edge



Hirohiko Tamiya

Section Manager,
Marketing Section,
Equipment Marketing Div.

Acquiring repeat orders through global collaboration and M&E strategy

Because the 3D packaging market for semiconductors is slow to expand due to its cutting-edge nature, it is no exaggeration to say that the acquisition of repeat orders determines business profitability. We are receiving increased repeat orders for the 3D packaging system Zero Newton®. In the case of Taiwan, our local engineers carefully analyzed the initial customer assessment and identified the requirements, and the Shonan Operation Center in Japan examined how to optimize the process conditions. We acquire repeat orders by finally identifying conditions that satisfy customers, using the M&E (Materials & Equipment) strategy as our strength and making optimization proposals modifying materials and equipment conditions.

Key Measures for the Final Year of the TOK Medium-Term Plan 2021

Pursue further profitability improvement as a starting point for medium- to long-term growth

We will pursue further profitability improvements in FY 2021/12 as the starting point for medium- to long-term growth by carrying on the measures that address the segment's high cost structure that results from the provision of individually customized units as original solutions for the customer.

Regarding the provision of relevant materials, consumables, and components for each unit and the proposal for the modification and overhaul of services to ensure stable earnings, we integrated the relevant subsidiaries in April 2019 to bolster our workforce in the Maintenance Division, leading to improved operating efficiency. Through these measures, we established the above operations as tasks for sales engineers, and expect to achieve a further enhancement of customer satisfaction and increased earnings in FY 2021/12. In particular, we expect further increase in the sales of relevant materials in line with the ongoing sales promotion of equipment in the Chinese market.

Sales promotion of 3D packaging system and plasma ashing system

As described above, the demand for the 3D packaging system Zero Newton® is increasing in line with the expansion of SoIC in the semiconductor market, and we are receiving inquiries for prospective repeat orders and the relevant negotiations will take place. As miniaturization is approaching its limit, SoIC is expected as a means to reduce the rising cost to achieve medium- to long-term market growth. We will promote the

sales of the system in Asia with its high demand and in other regions, while establishing an environment for the expedited local evaluation of demonstration units. The scope of application is gradually expanding not only for SoIC but also for 2.5D and 3D semiconductors. We will endeavor to acquire repeat orders in Asia, where we fully understand market share, while pursuing orders in new markets.

As mentioned above, we will also promote the sales of the 3D packaging system and the plasma ashing system for power semiconductors related to decarbonization. At the same time, we will make continuous efforts in cutting-edge fields to develop equipment for fan-out panel level packages, as well as flexible display manufacturing equipment, to lay stepping stones for medium- to long-term growth. (see page 71, "The Cutting Edge")

Always considering energy-saving, reduced material consumption, and higher functionality toward the achievement of sustainability

The awareness of sustainability is being infiltrated into the B2B business through the aggravation of climate change risks and the impact of the COVID-19 pandemic. TOK will continue to promote the sales of the systems for power semiconductors (3D packaging system Zero Newton® and plasma ashing system), as part of its key initiative to *promote environmental management* for the material issue of global environmental conservation. At the same time, TOK also pursues energy saving, reduced material consumption, and higher functionality in the development of the equipment to be provided. We also develop and provide tailor-made systems in response to similar requests from individual customers.

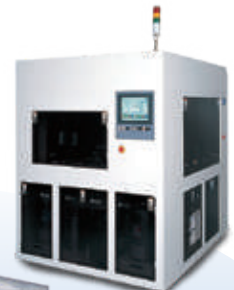
As needs become increasingly diversified in the semiconductor manufacturing equipment field, TOK will continue to specialize in niche domains.



Coating machine for photoresists



Development automatic dilution system



Developing machine

Vacuum UV hardening machine



UV curing machine



Coating machine for R&D



The Cutting Edge

Initiatives in the cutting-edge areas lead to medium- to long-term growth

The TOK Group positions the equipment business as another key business under the most important strategy of deepening and developing the e-material field in the TOK Vision 2030. The medium- to long-term growth strategies are implemented in the equipment segment as well, focusing on the semiconductor and display segments.

Semiconductor field: Developed equipment for the fan-out panel level packages as a state-of-the-art area

As described earlier, we strive to increase short-term earnings from the 3D packaging system and the plasma ashing system. At the same time, we will promote the development of equipment for fan-out panel level packages (FOPLP) as state-of-the-art technology, thereby pursuing medium- to long-term growth toward 2030 and 2040.

FOPLP is technology to assemble a large number of semiconductor packages at one time using large panels. TOK developed proprietary FOPLP equipment by applying its 3D packaging system Zero Newton® and marketed the initial model in FY 2018/12. FOPLP will grow for 5G communications and autonomous vehicles that require a large number of compact and high-performance semiconductor devices. TOK will continue to promote the development of FOPLP equipment.

FOPLP equipment and final application concepts



FOPLP equipment



5G communication



Autonomous vehicles

Flexible display manufacturing equipment and final application image



Flexible display manufacturing equipment



Flexible display

Display field: Developed manufacturing equipment for flexible displays as the state-of-the-art area

The microprocessor technology and the high-purity processing technology as our core competences can be broadly used not only for semiconductors but also for display production. TOK also has knowledge and know-how accumulated in the era when TV and display materials/systems were its earnings driver. Therefore, TOK will continue to reinforce its business portfolio by focusing on the state-of-the-art and high-added value segments, not only in the semiconductor field but also in the display field.

Toward 2030: increase equipment sales under the M&E strategy

To attain TOK Vision 2030, we will specialize in the niche areas of the equipment segment and promote the M&E (Materials & Equipment) strategy to propose processes for maximizing material characteristics based on profound knowledge of semiconductor materials. Under this basic principle, we will establish service sites in the central regions with high demand in the semiconductor segment and realize the equipment while identifying and promoting customer demand. In the display segment, we will promote the local supply of flexible display manufacturing equipment, and develop customers while enhancing cost competitiveness.