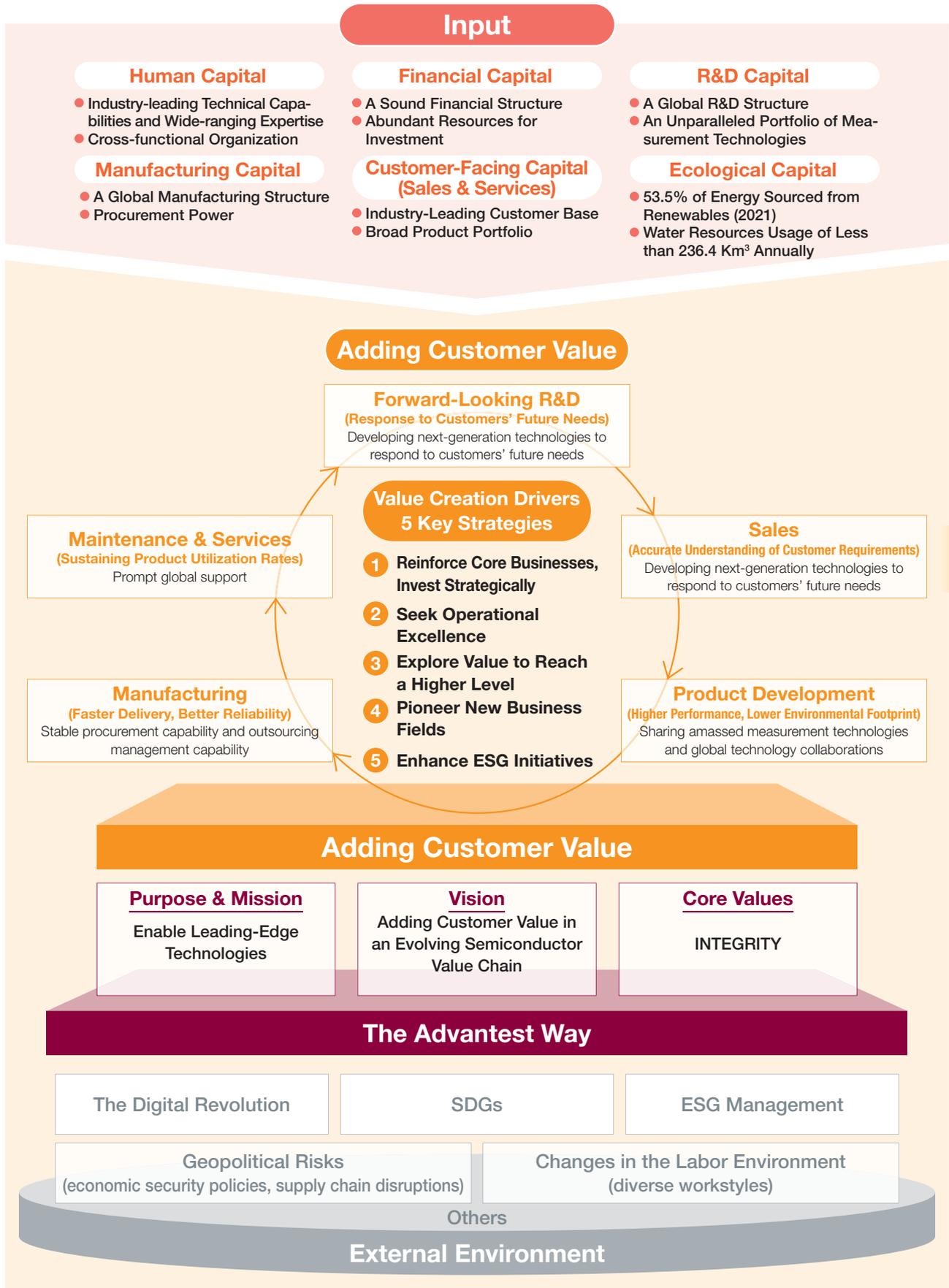


# Value Creation

## CONTENTS

- 23 The Value Creation Process
- 25 Financial Capital: CFO Message
- 29 Human Capital: CHO Message
- 32 Customer Relationship Capital
- 34 R&D Capital
- 36 Manufacturing Capital

# Value Creation Process



Value Creation Process

**Value Creation Drivers**

Anticipating significant mid/long-term growth in the semiconductor test market amidst the ongoing digital transformation, we have positioned our Grand Design and Mid/Long-Term Management Plan as our core management policies. This framework identifies five management focus areas as strategies, and we are working to improve corporate value by intensively investing financial and non-financial capital in these areas.

**Corporate Culture: the Foundation of the Value Creation Process**

The Advantest Way specifies the purpose and mission, vision, and core values that all Group employees should share. This is the basis of our corporate culture. It provides the context for our employees to maximize their abilities and achieve our Grand Design targets.

**Solutions for Customer Challenges: the Output of the Value Creation Process**

We provide test systems and other products, software, support and services, but these are just means to an end. Our ultimate goal is to help solve customer challenges and issues, and to deliver value in the form of future outcomes, through solutions that enable leading-edge technologies.



# Financial Capital: CFO Message

**We will aim to improve corporate value by further enhancing growth investments and shareholder returns.**

In this short essay, I'll explain the thinking behind our upward revisions to the metrics of our second mid-term management plan, announced in July 2022, as well as potential risks that lie ahead, and our policies regarding debt and cancelling treasury stock.



Director, Senior Executive Officer (CFO)

**Atsushi Fujita**

## Our MTP2 Updates

In FY2021, our initial earnings forecast in April 2021 called for sales of ¥350 billion and operating income of ¥85 billion (an operating margin of 24.3%), but due to extremely strong demand for semiconductors, actual results far exceeded our forecast, with sales coming in at ¥416.9 billion and operating profit at ¥114.7 billion (an operating margin of 27.5%). Demand for semiconductors continues to be strong in FY2022,

and in April 2022 we announced a forecast for sales of ¥510 billion and operating income of ¥150 billion (an operating margin of 29.4%) but after factoring in about 60% of the expected effect of yen depreciation due to exchange rate fluctuations, we revised our forecast upwards in July 2022 to ¥550 billion in sales and operating profit of ¥170 billion (operating margin 30.9%). Also in July 2022, we revised upward the target metrics of our second mid-term management plan (MTP2), which was announced in May 2021 and covers the three years from fiscal 2021 to fiscal 2023. Our average sales target for the plan period was revised upward from ¥480 billion to ¥520 billion,

## Revised Management Metrics

	MTP1 Results Avg. of FY2018-20	Previous MTP2 Targets* <sup>2</sup> (announced May 2021) Avg. of FY2021-23	MTP2 Targets* <sup>3</sup> (revised July 2022) Avg. of FY2021-23
Sales	¥290.4B	¥350-380B	¥480-520B
Operating Margin	22.3% <sup>*1</sup>	23-25%	27-30%
Net Income	¥60.1B	¥62-70B	¥98-120B
ROE	29.1%	20% or more	30-35%
EPS	¥309	¥320-370	¥510-630

\* 1. In MTP1 period, Advantest recorded one-off profit of approximately 12 billion yen.

\* 2. The exchange rates used in the previous announcement were 1 USD = 105 JPY and 1 euro = 130 JPY.

\* 3. The revised targets use exchange rates for FY2022 2Q-4Q and FY2023: 1 USD = 130 JPY and 1 euro = 140 JPY (actual rates in FY2021 were 1 USD = 112 JPY and 1 euro = 130 JPY, FY2022 1Q rates were 1 USD = 124 JPY and 1 euro = 134 JPY).

## Revised Cost / Profit Model

## Aiming for further profitability improvements while reinforcing our business

- We will further strengthen our R&D investments, human capital, and material procurement capabilities to create long-term sustainable corporate value.
- We will focus especially on maintaining a high level of R&D investment, which is key to increasing added value and maintaining sustainable competitiveness.  
Our revised MTP2 targets call for a cumulative total R&D investment of approximately ¥170B during the MTP2 period (total cumulative investment in MTP1: approximately ¥120B, previous MTP2 cumulative forecast: approximately ¥150B).
- We will respond flexibly to external changes amid considerable uncertainty in the global economy and our business environment.

	MTP1 Results (FY2018-20 Avg.)	Previous MTP2 Targets (announced May 2021) (FY2021-23 Avg.)	MTP2 Targets (revised July 2022) (FY2021-23 Avg.)
<b>Sales</b>	¥290.4B	¥350-380B	¥480-520B
<b>Cost of Goods Sold</b>	45%	45-46%	42-43%
<b>SG&amp;A as % of Sales</b>	33%	30-31%	28-30%
<b>Operating Margin</b>	22%	23-25%	27-30%

a 37% increase from the initial MTP2 target, and we also significantly raised our net income, operating margin, ROE, and EPS targets. The plan originally set a target for ROE of 20% or more, but now we are aiming for an even higher figure of 30% to 35%.

Average sales during the MTP2 period so far have already exceeded the target of ¥400 billion in sales we expected to achieve in FY2027 under our Grand Design. The progress envisaged in our Grand Design is happening as predicted, but faster. In order to stay abreast of the growth opportunities accompanying the progress of society's over all digitalization, we have maintained our strategic growth investment budget, including potential M&A transactions, at ¥100 billion for the three years of the plan, but our capital investment budget for production capacity expansion and customer acquisition has been raised from ¥40 billion to ¥70 billion, reflecting our commitment to resolutely capitalize on the abundant business opportunities around and ahead of us. Our R&D investment budget, which is the cornerstone of our competitiveness, was ¥120 billion during MTP1, and we have raised this to ¥170 billion during MTP2.

In addition, we have raised our expected shareholder returns from ¥150 billion or more to ¥210 billion or more, as we expect our operating cash flow to grow during MTP2, while seeking an optimal balance between shareholder returns and strategic investments. Our policy is to continue stable dividends, which are direct returns, and to also buy back our own stock as appropriate. In FY2021, we paid an annual dividend

of ¥120 per share, totaling ¥23.1 billion, and purchased ¥70 billion of treasury stock, thus returning ¥93.1 billion in total to shareholders, a sum that exceeded our FY2021 net income of ¥87.3 billion. We have announced a ¥50 billion share buyback for 2022 as well, but in the current favorable business environment we do not believe it is necessary to hold a large capital balance against the risk of asset loss. Therefore, to avoid holding excess cash on hand, we anticipate continuing to implement share buybacks, albeit over a longer timeframe. Such share buybacks are in balance with our growth investments, but if our growth investment budget does not end up getting entirely spent, we will consider transferring the unspent portion to shareholder returns. In any case, we will not keep surplus funds idle, and will hold a minimum cash reserve of ¥100 billion to be used as the scale of our business expands.

These MTP2 updates included a significant upward revision of our three-year average sales target based on actual results for FY2021 and our forecast for FY2022, but we are aware of the risk that annual sales in FY2023 may fall year-on-year. Although tester demand is currently solid, it is possible that the semiconductor industry may be entering an adjustment phase due to growing concerns about recession. However, even if sales decline year-on-year in FY2023, considering the mid/long-term growth prospects of semiconductors, we will be unlikely to implement cost reductions based on a single year's profit and loss. If sales declines are within our forecasted range, our profit margin may decline, but we estimate that we will be able to post a certain level of profit for the year.

## Revised Capital Policy &amp; Capital Allocation Outlook

## Allocate cash flow to investments and shareholder returns, while maintaining financial soundness, to improve capital efficiency

### Operating cash flow outlook

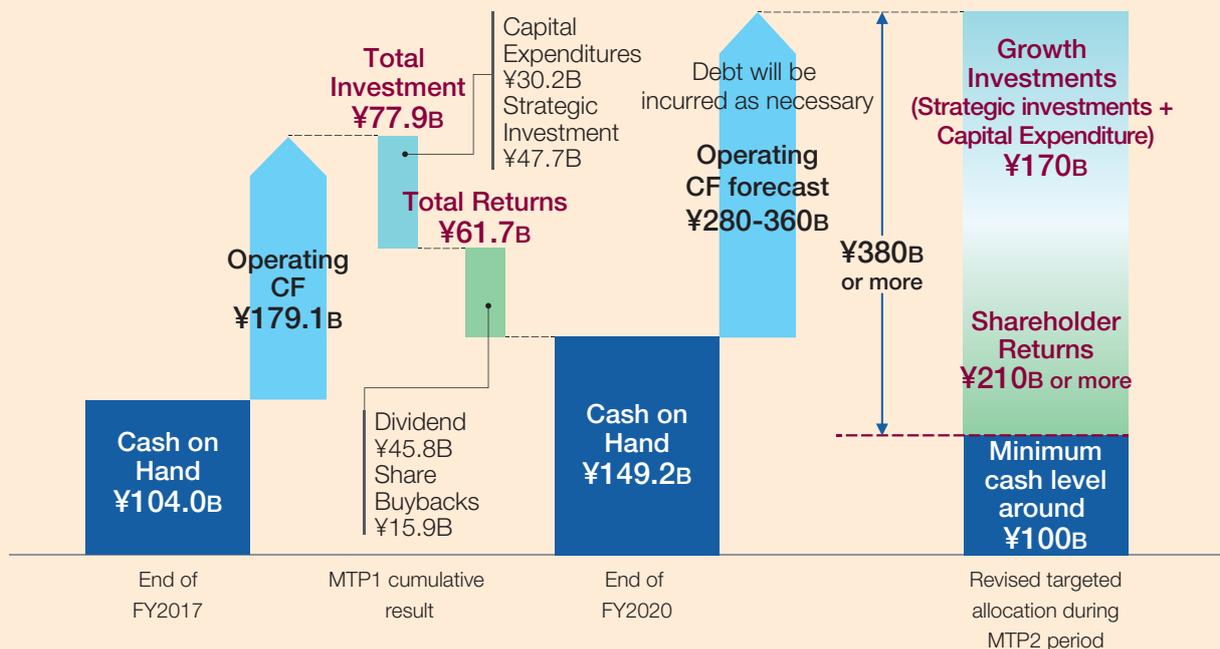
- Expected to total ¥280-360B cumulatively during MTP2 period (previously announced value: ¥220B or more)

### Minimum cash reserves

- Expected to be around ¥100B under normal business conditions
- Increased from the previously announced value of about ¥80B due to business expansion

### Balance sheet KPI: Foundation for further growth and shareholder returns

- Financial soundness: Seek appropriate capital level with shareholder equity ratio of 50% or more
- Capital efficiency: ROE 30-35% (previously announced value: 20% or more)
- ROIC-based business / investment management



### Focus on Parts Procurement, Not Efficiency, as a Priority

While maintaining our financial model of maximizing cash flow by increasing profitability and efficiency, we have set a 100-day cash flow conversion cycle (“CCC”) as a benchmark for efficiency. However, for the moment, this is a lower priority. With respect to the CCC target, the number of days in which receivables and payables are turned over does not fluctuate greatly, as in many cases we have basic contracts with business partners such as customers and suppliers. The most variable factor is inventory turnover days, but given the current shortage of semiconductors, Advantest is having difficulties procuring key parts and other materials for our products.

In this situation, rather than speeding up turnover by reducing inventory as much as possible, we are focusing on ensuring supply so that parts procurement difficulties do not cause delivery delays that would have a major impact on our trust relationships with customers. For this reason, at present we are aiming to hold as many parts as possible. Currently, product supply lead times are longer than previously, but if lead times return to normal as the shortage of parts is resolved, we will once again promote inventory management to meet our CCC target. However, although we expect that the current shortage of components will ease somewhat from the second half of this fiscal year, we believe it will take longer than that to return to normal.

Our sales have continued to grow by more than 30% year-on-year, and we have repeatedly revised our initial forecasts

## Total shareholder return (TSR)

— ADVANTEST — TOPIX (Including dividends)

(%)

500

400

300

200

100

0

The above is the cumulative TSR from the end of March 2017 to the end of March 2022.  
Calculated based on (Increase in stock price + cumulative gross dividend) / the Company's stock price

115.9

108.7

129.7

110.0

218.6

99.6

481.0

141.5

486.3

144.3

FY2017

FY2018

FY2019

FY2020

FY2021

	Last 1 year	Last 3 years	Last 5 years
<b>ADVANTEST</b>	101.1%	388.3%	486.3%
<b>TOPIX (Including dividends)</b>	102.0%	131.2%	144.3%

upwards. This is in part a result of the rapid growth of the semiconductor market, which is greater than we had expected—a good thing for Advantest. However, it is also true that we need to establish a system that can support the rapid expansion of our business. The median of our updated sales range target for MTP2 is ¥500 billion, and as the semiconductor industry is expected to continue growing in the medium to long term, we recognize that continued efforts to optimize our resource and cost structure accordingly are an important issue for Advantest.

## Loans

In FY2021, we raised about ¥30 billion by borrowing from banks. This was mainly on account of our acquisition of R&D Altanova in November 2021. At the time of this acquisition, we were also in the process of purchasing ¥70 billion of treasury stock. We do not fund acquisitions with borrowed money, but rather borrow the minimum necessary to cover any timing gap between cash flow earned from operating activities, growth investments including M&A, and shareholder returns based on optimal utilization of capital. If our balance of cash and deposits is set to fall below our set minimum level, we borrow from banks and/or issue corporate bonds. However, this does not mean actively increasing interest-bearing debt from financial institutions. While setting a shareholder's equity ratio of 50% or more as a KPI for financial soundness, taking into consideration the major demand fluctuations that have characterized the semiconductor industry in the past, we are careful not to keep a large amount of debt on our balance sheet for a long time. Our policy is to maintain a proper balance between liabilities and equity.

## Share Cancellation

We announced in July 2022 that we will cancel 8 million shares of treasury stock. We purchased ¥13.1 billion and ¥70 billion of treasury stock in FY2020 and FY2021, respectively, and as of the end of June 2022, we held approximately 9 million shares of treasury stock. In the past, treasury stock we had acquired was returned to the market through the exercise of convertible bonds or stock options. However, we believe that it is undesirable for shares acquired as shareholder returns to return to the market, so we have decided to cancel the treasury stock we currently hold, excluding the number of shares needed for our stock compensation plan, such as unexercised stock options. We intend to continue to purchase treasury stock in order to acquire shares to enhance shareholder returns and for stock compensation, but our basic policy is to cancel treasury stock once it is purchased to further improve shareholder returns.



# Human Capital: CHO Message

## Advantest's Human Capital Management Strategies Are Closely Linked to Our Management Strategy

Individual and organizational strengths are the two “wheels” that drive human capital management. We aim to increase engagement and reinforce the “comprehensive strength” of our human capital, which is what generates sustainable value over time.



### The Importance of Human Capital Management

The term “human capital management” has gained currency recently, pointing up an important refinement to the traditional concept of “human resources.” The word “resource” implies that people are something a company uses. That suggests a management focus on ways to manage its use and cost of these “resources.” However, we must remember that people grow, improve themselves, and become the sources of future value creation. At the same time, necessary human capital can also come from outside the company.

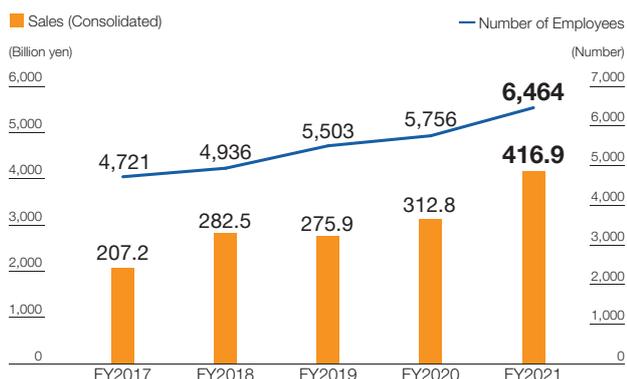
The new understanding of “human capital” represents a shift from thinking about people as something the company

“uses” to thinking about them as something we invest in. We must secure the necessary human capital in response to changes in our business environment, and invest in it to create additional value. Obviously, human capital management strategy is closely linked to management strategy.

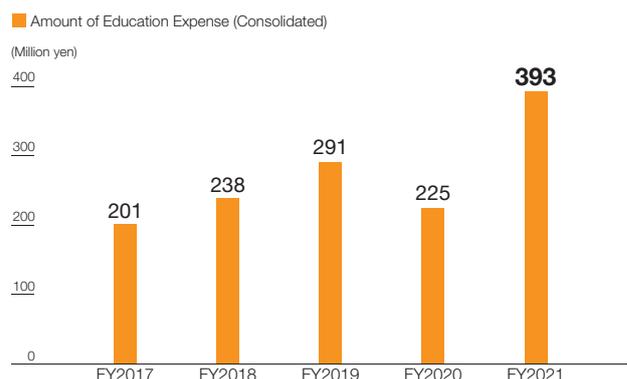
Under Advantest's Grand Design, semiconductors are expected to play an increasingly important role as semiconductor production volumes increase, and semiconductor test also takes on greater importance. In addition, Advantest has defined its vision as “Adding customer value in an evolving semiconductor value chain,” and clarified initiatives to expand our business domains.

In fact, during the Grand Design period so far, net sales have more than doubled from ¥207.2 billion in FY2017, before the formulation of the Grand Design, to ¥416.9 billion in

### Sales / Number of Employees



### Investment in Education



## Human Capital: CHO Message

FY2021. As a further step towards achievement of our vision, we have also expanded our peripherals business by acquiring system level test business from Astronics. Essai, R&D Altanova, and CREA.

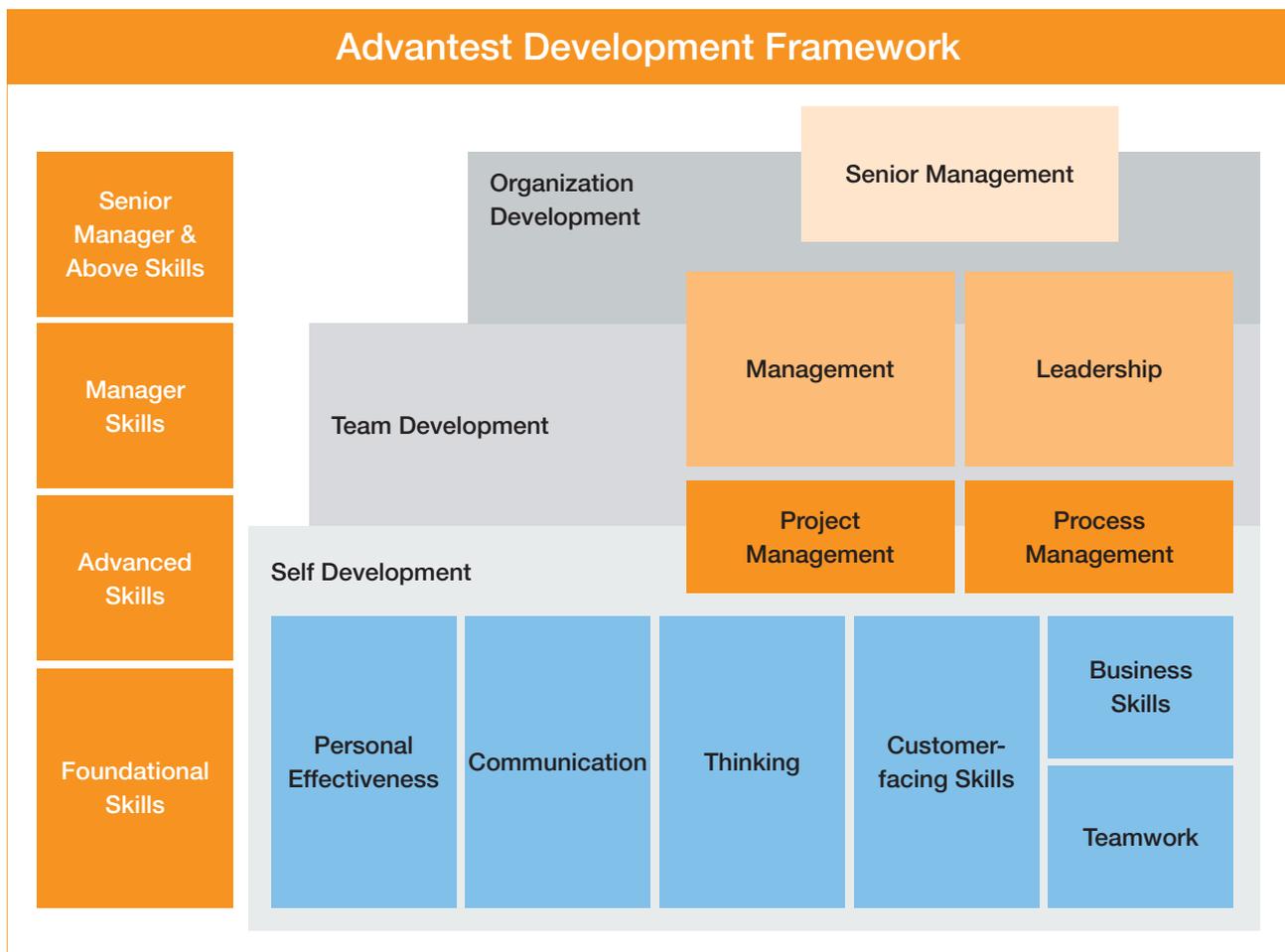
Furthermore, global headcount has increased significantly from 4,721 (as of the end of March 2018) to 6,464 (as of the end of March 2022), highlighting our commitment to secure essential human capital in anticipation of future business expansion. Needless to say, human capital management will become increasingly important for Advantest.

### Boosting Individual Strength

Both individual strength and organizational strength are needed to enhance the comprehensive strength of human capital. Initiatives that rest on these two “pillars of strength” will increase employee engagement, helping personnel to develop into the human capital that will ultimately support Advantest’s future growth.

First, in terms of individual strength, we will pay even greater attention to skills development. The Advantest Development Framework defines the fundamental skills, advanced skills, manager skills, and senior management skills that Advantest seeks for employees to acquire. In conjunction with the introduction of the Development Framework, we also introduced three online learning platforms, LinkedIn, Franklin Covey and Udemy, to support employee self-development. In addition to various types of employee training, we will also strengthen selective training in order to cultivate the next generation of managers.

We are continuing to enhance our hiring processes by taking a panoramic view of the world so as to secure human capital where and when they are needed. Advantest Japan (ATJ) actively recruits not only new graduates but also mid-career workers. Furthermore, we plan to enhance our stock compensation system to encourage employee retention, so that talented employees, especially excellent engineers, will remain with us for many years.



\*The implementation will be adapted to local rules and practices

## Boosting Organizational Strength

Our INTEGRITY Core Values shape our organizational strength. After our revision of The Advantest Way in 2019, we held workshops for all employees around the world, at all our locations, to deepen employees' understanding of The Advantest Way, including the new INTEGRITY Core Values. All executives and employees from all over the world participated in the workshops, despite a temporary pause owing to COVID-19 restrictions. In FY2021, our efforts focused on leadership, and we encouraged all Advantest leaders to take a personal journey of leadership growth using a customized Leading with INTEGRITY Workshop. Now that INTEGRITY has become more pervasive through these efforts, we have begun promoting initiatives that concretely demonstrate what it means to be "living with INTEGRITY" and further the establishment of INTEGRITY as a deeply-rooted corporate culture. In addition to introducing "The INTEGRITY Awards," a peer-to-peer recommendation program that enables Advantest employees to recognize and express their appreciation for colleagues who have demonstrated INTEGRITY in exceptional ways with the CEO taking the lead, we have placed 32 INTEGRITY Ambassadors at each location, to promote the revitalization of our corporate culture.

## Strengthening and Revising Our Personnel System

As a link between these two "pillars of strength," we are committed to strengthening and revising our personnel system. Rather than be blinded by pressing, immediate issues, we will aim to build the personnel system that is necessary now in order to achieve Advantest's corporate vision five or ten years from now, based on our management strategies. For example, while many employees are expected to retire in the near future, based on the current age distribution of our workforce, we will consider adopting a mid/long-term perspective and developing a system that allows capable human resources of all generations to play active roles.

These strategies are expected to not only increase individual and organizational strength, but also reinforce the foundations of employee engagement. Employee engagement is one of the essential elements of Advantest's earning power. Increasing the comprehensive strength of our human capital is therefore directly linked to creating value over the mid/long-term.

**ADVANTEST**  
**INTEGRITY AWARD**

A President's Award to recognize employees, who outstandingly demonstrate INTEGRITY and make a positive impact in our day-to-day work environment

**Who Can Participate**  
All Advantest Employees Eligible  
All Advantest employees are eligible to recognize another individual or group of Advantest by submitting nominations

**When To Nominate**  
Nomination All Year Round  
The nomination process for the INTEGRITY Award is open throughout the year, with the selection process occurring once every quarter. The awardees of each quarter will become candidates for the annual President's Award

- 1 Start From Our Core Values**  
Strengthen and honor the adoption of our Core Values through positive recognition  
**Culture**
- 2 Involve colleagues**  
Empower employees enabling Peer-to-Peer nominations  
Inclusive, all voices are heard  
**Nomination**
- 3 Award Committee Selects Employees**  
Quarterly and Annual Awardees  
Selection criteria based on demonstration of INTEGRITY (9 core values) and positive impact to the work environment  
**Selection**
- 4 Host Ceremony and Handout Prizes**  
CEO recognizes employees excelling at demonstrating INTEGRITY  
**Ceremony**
- 5 Pass It Forward**  
Pass it Forward because "sharing is caring"  
**Prize Sharing**
- 6 Spotlight Success Stories**  
Showcase real stories to bring our Core Values to life  
**Success Stories**

Excerpted from internal materials related to the Integrity Awards

# Customer Relationship Capital

Through our close partnerships with a wide range of customers and advanced technical consultation capabilities, we continuously provide solutions that increase customer value.

## Trust-Building is the Starting Point for All Our Activities

Our sales department sells hardware and software, creates device test programs, installs products, and arranges troubleshooting. The role of sales is to optimize customer satisfaction through this whole series of processes. Gaining the trust of customers and colleagues is a major premise for their activities. Furthermore, the trust relationships forged by individuals multiply with each other to create trust in Advantest.

In order to win customer confidence, we build relationships of trust at all levels, from sales representatives to top executives. There are times when multiple customers are involved in a single business negotiation, but even in such cases, we aim to build relationships of trust with all of them. Also, orders cannot be obtained through sales alone. It requires communication and teamwork among all relevant departments within the company, with the Sales Group bringing them all together. Therefore, it is very important to have relationships of trust within our own company, too. We are committed to ensuring that each and every salesperson is a trustworthy individual so as to build a trustworthy organization.

## Human Resources Development Leads to Enhanced Competitiveness

Our wide variety of training and skill-enhancement courses help sales personnel grow into trusted, talented, and proactive human resources. At the same time, rather than rely on individual skills, we aim to boost our “selling power” by sharing the expertise the sales division has acquired over the years. For example, a salesperson working in tester sales must have three main strengths: (1) the ability to correctly understand customer requirements and provide feedback within the company; (2) the ability to put together the most valuable solutions for customers while consulting with customers and internal stakeholders; (3) the ability to accurately understand and communicate the customer value that our solutions bring to our customers. Within our sales division, we have a marketing team that collects and analyzes market trends and test trends, a team that promotes sales of a wide range of our products, and a team that talks directly with customers. While exchanging information, we provide solutions aimed at improving customer value.

## Global Exchanges of Information

In response to the global expansion of the semiconductor value chain, it is crucial for account managers to be able to overcome language barriers and cultural differences and communicate with our overseas locations and customers in other regions. The semiconductor value chain is increasingly complex. In addition to traditional vertically integrated IDMs (Integrated Device Manufacturers), our mainstream customers are horizontally specialized fabless companies, which design devices, and OSATs (Outsourced Assembly and Test companies), which carry out semiconductor back-end processes such as assembly and test. In order to support this horizontally specialized ecosystem, it is necessary to share information effectively between account sales representatives in charge of fabless and those in charge of OSATs so as to seamlessly connect the upstream (fabless) and downstream (OSAT, etc.) processes.

In terms of sharing information within the company, we have established a system that clarifies reporting lines and facilitates distribution of information to all concerned parties around the world. Likewise, we hold regular global conferences to leverage our information-sharing network. There, along with the sales representatives from all over the world, R&D and SE personnel (system engineers, who develop test programs and application software tailored for each customer) dig deeper and share customer-related and product-related information. The fruits of these in-depth discussions are very useful in our daily business activities.

## Proposing Comprehensive Solutions

The whole company’s comprehensive strength is critical to maintaining a competitive edge, and the sales force, at the forefront of business, must possess especially keen abilities to collect even the smallest scraps of information. In addition, we frequently share information collected with related parties and globally work out countermeasures, transcending regions and departments.

We have strong core capabilities that satisfy the needs of our customers, including the high quality and reliability of our products, our broad portfolio, and our worldwide support system. Our comprehensive strength, which enables us to propose solutions that give customers real added value, rather

## Customer Relationship Capital

than just selling products, is a big advantage allowing us to escape the price competition trap.

### Passing on the “Secret Sauce”

Advantest tops the ratings chart of the TechInsights (formerly VLSIresearch) Customer Satisfaction Survey, having captured the No. 1 spot on the annual survey of global semiconductor companies for the third consecutive year, as announced in May 2022. In addition, Advantest was placed on the 10 BEST list for large suppliers of chip making equipment for the 34th consecutive year. Advantest achieved high ratings from

customers in categories including Recommended Supplier, Trust in Supplier, Technical Leadership, Partnering, and Field Engineering Support, and was the only automated test equipment supplier to receive a 5 VLSI Star designation. This recognition validates our commitment to customer engagement.

In order to pass on our achievements to the next generation and transform tacit knowledge into explicit knowledge, we formulated “The Advantest Way” summarizing our mission, vision, and Core Values. We are currently working on inculcating them throughout the entire Group. We use the Ambassador system to carry out in-house dissemination activities and announce their results in our in-house newsletter and meetings so that our employees are receptive to making our Core Values their own.

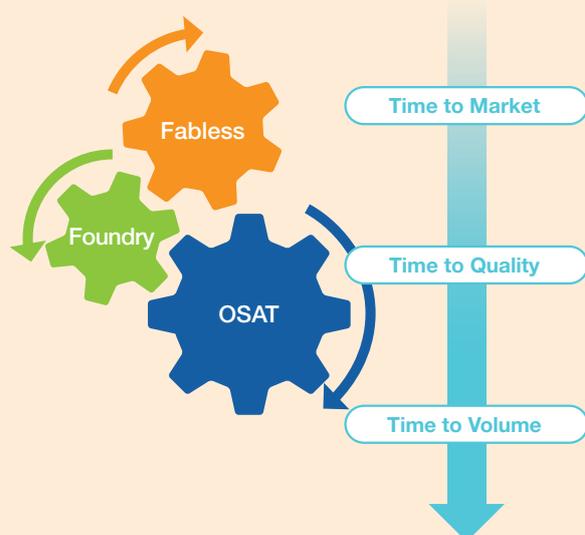
## Engineering Consultations Support Semiconductor Market Growth

**More than 600 test engineers support our customers’ business worldwide**

**As the evolution of semiconductors increases the difficulty of test, we provide consultations on appropriate test methods and environments for the latest semiconductors.**

- Seamless technical support from design / evaluation to volume production fabs
- Integrated solutions that include peripherals, leading the industry in measurement reliability and efficiency

**Test trend data is fed back to the R&D teams developing next-generation testers to benefit customers**



**Close partnerships with a broad range of customers drive mutual growth**

# R&D Capital

## Advanced development of technology and Group-wide information-sharing to develop competitive products

### Advantest's Human Resource Development System & Corporate Culture are the Source of Our Technical Strength

Leading-edge semiconductor test systems cannot be developed with theories and expertise alone. Our R&D is rooted in our long history of exchanging information with customers and exploring the essence of solutions that customers truly want. In addition, it is rooted in the development of human resources who support this ongoing project. While learning from the wisdom of our predecessors is important, that alone would not enable us to catch up to and overtake the speed of technological evolution. To encourage our engineers around the world to further educate themselves, Advantest has implemented basic education programs, OJT, and other training appropriate for each individual's level. Furthermore, to continuously improve design quality, we have established a "Design Review Meister System" where experts in each specialty participate in various design reviews. In addition, although it is not so easily visible, we also have a corporate culture where employees can discuss issues freely regardless of seniority,

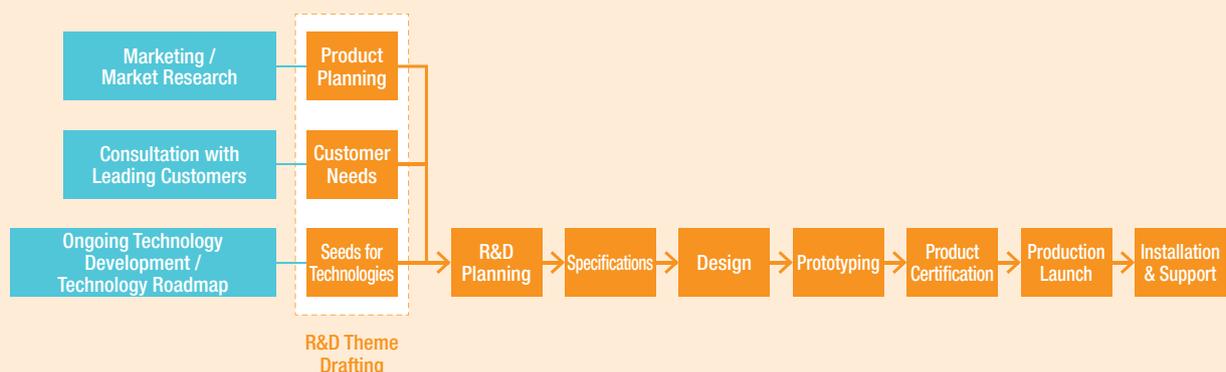
empowering young employees to take on challenges, where even if they fail, they will not be blamed. Instead, their failures will be leveraged to improve their chances of future success. This unique system and corporate culture nurture our employees, who in turn generate Advantest's unique strength.

Our major semiconductor test system R&D facilities are located in Boeblingen, Germany, and Gunma, Japan. In order to develop products incorporating new ideas, we regularly hold technology exchange meetings between these two locations, which often throw up clues for development. R&D synergies through such technology exchanges are not limited to these two locations, but also exist among our locations in the United States and other countries. Apart from our Gunma R&D Center, Advantest also has research laboratories in Sendai, Japan, to carry out fundamental research—the preliminary stage of product development—and also sponsors endowed programs at various universities around the world, including Germany and Japan. Some of the fundamental research carried out at these laboratories translates into the development of advanced elemental technologies for testers, which enhances the competitiveness of our products.

## R&D Processes & Design Reviews

The diagram below shows the R&D process from product planning to completion of development and transfer to the production department. At the planning stage, we refer to information and advice from marketing and customer service departments, and work with the Quality Assurance Department for product certification, the Production Department for manufacturing start-up, and the Service Department for installation and support. At the design stage, we collect opinions from a wide range of departments in order to address various aspects such as availability

of parts, suitability for mass production, and post-sales maintainability. Due to the nature of advanced technology, the research and development process may not proceed smoothly and engineers may sometimes have to backtrack. In order to minimize these productivity losses, we conduct design reviews at every important step from development planning to prototyping. The reviews cover a wide range of topics, including specifications, circuit/block diagrams, and verification methods, so that quality is built in from the upstream stages of development.



## Communication with Customers Strengthens Our Technical Capabilities

Advantest has a track record of leadership in the semiconductor test market for nearly 40 years. Additionally, we have an extensive product portfolio, a global support system, and long-standing relationships of trust with many customers, including industry-leading companies. Our in-depth technical discussions based on these trust relationships and their accumulated fruits have become a great asset for our product R&D. Product specifications are often determined by gestalts of multiple factors such as function, performance, delivery time, and cost. However, at Advantest, we communicate with our customers constantly, shunning one-sided judgment calls, and seek the true solutions – the “essence” - that lie behind superficial criticisms. A cycle of mutual technological capabilities and trust relationships facilitates deeper communication that ultimately leads to true solution development, which strengthens both Advantest’s and the customer’s technological capabilities and enhances our trust relationship, is one of the underpinnings of our solid business platform.

## A Shared, Global Technology Roadmap

We think ahead of where technology and business are at any given moment, to preemptively provide the test solutions that our customers truly need. To begin developing necessary technology only when it is needed is a recipe for failure. As a guideline for the development of next-generation test solutions, we have formulated a technology roadmap that covers the elemental technologies that will be needed in the future.

Semiconductor test systems themselves use a great number of semiconductors, and many next-generation test technologies require the development of new semiconductors.

Our technology roadmap is also shared at in-house technology conferences, so that the technical requirements of multiple product development projects can be incorporated, contributing to better development efficiency through parts standardization and other measures.

## A System That Emphasizes Failure Analysis Creates Competitive Products

For a product to have high reliability, it must naturally be designed for reliability right from the start, but feedback from the market is also imperative. If a defective product is found in the market, just repairing it will not lead to quality improvement. At Advantest, we thoroughly analyze the cause of the defect after carrying out repairs, even taking apart the components used in the product, to find the true cause – again, the “essence” - of the defect. We have even introduced high-performance equipment solely for our analysis environment. Failure analyses, in the short term, are an expense with no economic return. But although we do have the option to outsource failure analysis, we always conduct a thorough failure analysis on our own, which is then fed back into the design. This is because in the long run, proper analysis will lead to higher product quality and profitability. Since our founding, our corporate culture of thoroughly investigating the causes of defects and taking appropriate countermeasures has taken root not only in our R&D operation but also through our entire Group. This is another thing that makes Advantest unique.



# Manufacturing Capital

Our superlative product supply system appropriately combines in-house production and outsourcing.

## Advantest's Manufacturing Strengths

The greatest strength of Advantest's manufacturing system is that we are able to effectively combine three different production methods: all-in-house production, EMS production by a company that handles the entire supply chain, and outsourcing to partners that handle only the manufacturing of products. Each method has advantages and disadvantages, but we constantly compare them and strive to optimize its advantages, enabling us to rapidly expand production capacity on short timescales. In the past, Advantest manufactured almost 100% of its products in-house, but with the acquisition of Verigy in 2011, we also adopted the EMS production method that Verigy had used, and switched some manufacturing from in-house to outsourced production. That percentage is now more than 80%, and the role of our Japanese production division, which had previously handled in-house production, has changed significantly. The Gunma Factory, our in-house production facility, is evolving into a "mother factory" that operates the entire manufacturing process in collaboration with our outsourcing partners.

## Strengthening Production Transfer Capabilities to Support Business Expansion

Our sales in fiscal 2016 were ¥155.9 billion. Five years later, in fiscal 2021, sales increased sharply by about 2.7 times to ¥416.9 billion and are expected to reach ¥550 billion in fiscal 2022. Under these circumstances, our greatest challenge in terms of manufacturing is to expand our supply capacity on short timescales. When a demand bubble occurred in the memory market in 2017 and 2018, we were not able to ramp up production quickly enough to meet customer needs. Learning from this experience, we analyzed how we could optimize our production transfer capabilities in order to boost outsourcing within short timeframes. We formed a dedicated team to review our parts supply system and logistics, optimize our manufacturing process, automate manual work, reduce labor in the adjustment process, simplify and digitize documents, and make other improvements. This enabled us to prepare for the next demand peak.

## Three Parts Procurement Strategies that Form the Foundation of Our Supply Strategy

### 1 Supplier contracts and a flexible design change system

For parts that are purchased in large quantities, we sign long-term purchase agreements with suppliers to secure the necessary quantities. In the past, the tester business was highly susceptible to economic fluctuations, so long-term contracts were risky. However, in light of the tester market's recent trend towards stable expansion, our policy is now to sign long-term contracts after carefully analyzing future demand and projects. On the other hand, for special parts that are used only in some of our products and standard parts that are frequently used, we work closely with the R&D department to procure general-purpose parts that are readily available in the market from multiple suppliers.

### 2 Stronger partnerships with strategic suppliers

In emergency situations when the supply of parts is extremely tight, it is crucial to communicate and build relationships of trust with suppliers and with the end suppliers who provide parts to our suppliers. To help them fully understand Advantest's needs, we assign procurement managers to the global regions where supplier executives are located in order to strengthen relationships and mutual understanding at the executive level. Regular opportunities for face-to-face communication to deepen understanding are essential. In addition, we are focusing on deeper cooperation with the procurement teams of major global EMS companies, aiming to utilize their wide-ranging networks, massively multi-supplier procurement management systems, and buying power.

### 3 Rapid decision-making powered by IT

In the dynamic environment of the semiconductor business, where demand can fluctuate wildly, real-time, end-to-end visualization of the entire supply chain helps us to respond to large demand fluctuations in the shortest possible time. At the same time, these visualizations also play an important role in monitoring impacts on our business several months out and in taking proactive measures.

Based on the lessons we learned from our supply system difficulties in 2017-2018, we have been implementing simulation tool and procurement strategies that can aid in the visualization of real-time supply chain data. Now, by inputting business plan data for several years ahead, it is now possible to derive future production capacity, the number of necessary parts, and the number of facilities in short supply in real time.

## A Multi-Sourced, Location-Agnostic Product Supply System

In order to keep up with market growth that has already outpaced the predictions of our Grand Design, we must further expand our outsourced production capacity. Also, in order to make sure we can fulfill our responsibilities to supply products without interruption, even in the event of a major earthquake or flood, we need to build a multi-sourced, multi-product supply system. In the future, we plan to introduce a shared IT environment for the supply chains of our outsourcing partners and companies that have joined the Advantest Group through acquisitions, with the goal of managing and operating a global supply chain that can work around regional disruptions. We also plan to implement more advanced DX methods while augmenting our workforce of excellent IT professionals through in-house recruitment or outside hiring.

## Manufacturing For the Environment, Manufacturing For Everyone

Awareness of environmental conservation has gained prominence in the semiconductor value chain in recent years. Customers tend to emphasize environmental impact in their product selection, while subcontractors act as pioneers in introducing renewable energy. Advantest has also made contributions such as achieving 100% renewable energy at the Gunma Factory, but there is still room for improvement, including in product design. Our ESG Promotion Office will continue to exchange information with customers, while learning about customer requirements related to environmental protection, and evaluating their application to manufacturing. Recently, human rights in the supply chain have also become a high-profile issue. When selecting subcontractors, we carefully consider human rights and strive to prevent fraud and harassment by exchanging information with subcontractors on a daily basis.

