TOKYO ELECTRON
CORPORATE PROFILE

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PR59-195
CEO’s Message

2020 saw the global spread of COVID-19 and frequent natural disasters arising from climate change, including torrential rains in Japan and hurricanes and cold spells in North America. On the other hand, it was also a year when digital transformation (DX) made progress in our daily lives and all kinds of industries, and the importance of semiconductors, which are essential for information and communication technologies (ICT), became prominent. Applications expanded for the displays that link people and data, and additional advances in technological innovation were made. As a result of the spread of the IoT, AI, 5G and other technologies, a data-driven society accelerates at an unprecedented pace. With the rising efforts to solve global environmental problems progress, “digital and green” is now a major trend around the world.

Under the circumstances, applying our expertise as an equipment manufacturer developed through being an industry leader and using all management resources, including our employees who both create and fulfill company values, we will contribute toward achieving the societal shared value of balancing “digital and green.” We also endeavor to practice our Corporate Philosophy, “We strive to contribute to the development of a dream-inspiring society through our leading-edge technologies and reliable service and support” while expanding medium- to long-term profit and continuous corporate value enhancement.

We deeply appreciate your support for Tokyo Electron and look forward to your continued support and patronage.

Toshiki Kawai
Representative Director, President & CEO

Corporate Philosophy

We strive to contribute to the development of a dream-inspiring society through our leading-edge technologies and reliable service and support.

Management Policies

The Management Policies highlight the management values that Tokyo Electron (TEL) regards as essential to achieving the objectives defined in its Corporate Philosophy. They express the logic that underscores our eight general rules of management.

TEL Values

TEL Values highlight the values and codes of conduct as Tokyo Electron.

Vision

The Vision describes TEL’s medium-to-long-term business aspirations and the direction of TEL’s near future.

A truly global company generating high added value and profits in the semiconductor and flat panel display industries through innovative technologies and groundbreaking proactive solutions that integrate diverse technologies.
Evolution of semiconductors

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>1963</td>
<td>Tokyo Electron Laboratories, Inc. established in Akasaka, Minato-ku with capital of five million yen invested by Tokyo Broadcasting System, Inc.</td>
</tr>
<tr>
<td>1964</td>
<td>TEL acquires importing and selling rights for diffusion furnace manufacturer Thermco Products Corp. (U.S.) and begins sales</td>
</tr>
<tr>
<td>1965</td>
<td>Concludes an agency agreement with Fairchild Semiconductor Corp. (U.S.) to sell Fairchild's IC testers in Japan</td>
</tr>
<tr>
<td>1968</td>
<td>Forms a joint venture with the Thermco Products Corp. (U.S.) named TEL-Thermco Engineering Co., Ltd. begins domestic production of diffusion furnaces</td>
</tr>
<tr>
<td>1970</td>
<td>Completes domestic production of diffusion furnaces</td>
</tr>
</tbody>
</table>

1976: TEL-Thermco Engineering Co., Ltd. develops the world's first high-pressure oxidation furnace.

1984: Listed on the First Section of the Tokyo Stock Exchange

1986: Expert of semiconductor production equipment begins

1994: The first year for globalization

1999: Category of industry on the Tokyo Stock Exchange First Section changed from “Wholesale Trade” to “Electric Appliances”

2005: TEL receives Tokyo Stock Exchange’s Teikoku Annual Award for Excellence in Disclosure for the second time since 1999

2019: Formed a partnership with BRIDG

2021: TEL cited as Thomson Reuters’ “Top 100 Global Tech Leaders” (Current Refinitiv)

The History of TEL

For approximately half a century, TEL has tirelessly pursued the newest technologies and innovations. TEL began as a technical specialized trading company. However, with the trend of semiconductors being about to transform the industry, one of the firm employees—Tokuo Kubo, Toshio Kodaka and others—turned entrepreneur.

The electronics industry was still in its infancy in 1963 when young trading firm employees—Tokuo Kubo, Toshio Kodaka and others—founded a technical specialized trading company named TEL-Thermco Engineering Co., Ltd. in 1963 with capital of five million yen invested by Tokyo Broadcasting System, Inc. As a trading company with manufacturing capabilities, TEL-Thermco Engineering Co., Ltd. began domestic production of diffusion furnaces in 1968. The company was renamed Tokyo Electron Ltd. in 1980.

From the 1990s onwards, TEL reinforced its group company structure in Japan by establishing a number of subsidiaries responsible for services, production, and other functions. TEL’s overseas operations—which expanded overseas in 1995 and in 1996—were responsible for sales and support in the fast-growing global market. This restructuring of TEL’s overseas subsidiaries was the key to realizing TEL’s sales exceeded domestic sales, turning TEL into a truly global company.

In 2015, TEL introduced the Medium-term Management Plan with a financial model for achieving world-class profitability, and renewed the corporate logo to emphasize a fresh start. Since the spread of IoT, AI, and 5G, the company is becoming increasingly data-driven. As semiconductors and FPDs are the enablers of the digital society, the market for semiconductors and FPD production equipment is also entering a new phase of growth. As an equipment manufacturer, TEL resolved to help society achieve the balancing of “digital and green” while increasing the corporate value even further.
The roles of semiconductor are shifting from “selling products” to “selling value”

Everything is connected in the IoT age, including cars, traffic systems, and medical devices. Today, semiconductors are ubiquitous in personal electronic devices such as PCs and smartphones and are also essential to diverse application servers and data centers that are the backbone of the 5G and 6G infrastructure. As our society becomes increasingly data-centric, “selling value” rather than “selling products” will become the key drivers of semiconductor demand, bringing the semiconductor production equipment market into a phase of higher growth.

TEL’s Projection of the Future

TEL’s focus is on two core product categories: semiconductor and FPD production equipment. Building on the technological expertise and know-how that we have been cultivating since its inception over 50 years ago, we strive to contribute to the development of a dream-inspiring society.

The semiconductor market size is expected to exceed about US$1 trillion by 2030, more than doubling the level in 2020, which was around US$440 billion. The foundation of this enormous market is the semiconductor production equipment industry. With the need for a wide variety of new technologies at the nano level as the leading technological innovation, TEL’s role within the industry is becoming more critical than ever.

Digital and Green Transformations Contributing to the Development of a Dream-Inspiring Society

The spread of ICT, the progress of DX, and the movement toward decarbonization—all of these are part of a global drive to build a “digital and green” society, and technological innovation of semiconductors are critical to its success. The pursuit of advanced semiconductors—with larger capacity, higher speed, higher reliability, lower power consumption, and more—is never-ending. Similarly, displays are expected to evolve further as an interface between people and data, which also requires technological innovation to continue. Through our commitment to both these business areas of production equipment, TEL will keep contributing to the development of a dream-inspiring society.
To Deliver the Best Products and Best Technical Service

As we enter the age of IoT, the semiconductor and FPD markets are entering a new growth phase as these devices gain recognition as the critical building blocks of social infrastructure. Today, semiconductors and FPDs are required to perform higher and faster with lower power consumption than ever before. In order to provide high value-added and competitive manufacturing equipment for these devices in a timely manner, advanced R&D capabilities that are extensible to future technology generations are required. TEL emphasizes the shift left approach in R&D, which means investing significant resources (technological, human, and financial) at earlier stages. We then work with our customers to formulate a technology roadmap and develop whatever technologies necessary to attain the goal. Our ability to anticipate customers’ needs in the next-generation and beyond ensures timely delivery of high-quality products featuring exciting new technologies.

TEL’s R&D Goals

Taking the future market growth into account, TEL has been planning R&D approximately 400 billion yen in the three years starting from fiscal 2020. Our vigorous R&D programs deliver next-generation products with cutting-edge technologies.

R&D

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R&D expenditures (Billion yen)

<table>
<thead>
<tr>
<th>FY 18</th>
<th>FY 19</th>
<th>FY 20</th>
<th>FY 21</th>
<th>FY 22</th>
</tr>
</thead>
<tbody>
<tr>
<td>97.1</td>
<td>136.6</td>
<td>120.2</td>
<td>113.9</td>
<td>160.0</td>
</tr>
</tbody>
</table>

TEL has been expanding its R&D capabilities by cooperating with technology consortium in Japan and abroad, with a view to enabling further innovations. Examples include participation in a world-class research hub that is developing hardware for next-generation AI, cooperation with BRIDG—a Florida-based non-profit public-private partnership, and tighter collaboration with imec on extreme ultraviolet (EUV) lithography. TEL’s external collaboration is far-reaching, covering everything from the development of fast-evolving technologies/applications to their introduction to the market. We are also working with academia, including major universities in Japan. TEL is collaborating with the National Institute of Advanced Industrial Science and Technology (AIST), which is one of the largest institutes in Japan, in wide-ranging fields, including research on magnetoresistive random access memory (MRAM).

R&D Facilities

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R&D

R&D Sites

Addressing multi-polar needs for ultimate nanoscaling

TEL Digital Design Square
Opened in November 2020
(Sapporo City, Hokkaido)

Aiming to enhance its DX capabilities, TEL recently relocated its software development office in Sapporo to a new building. The move aims to incorporate advanced AI and IoT technologies into TEL’s products and develop unprecedented high value-added technologies to benefit our society. The creative use of the office space and the latest facilities stimulate state-of-the-art software development ideas and support the recruitment and training of data scientists/analytics necessary for the implementation of DX.

Miyagi Technology Innovation Center
Building to be completed in September 2021
(Taiwa-cho, Kurokawa-gun, Miyagi)

TEL is constructing this center to accelerate the development of advanced etching technology—one of the critical areas in semiconductor manufacturing. The center is designed to become an advanced research facility that sparks new innovations by integrating technologies from diverse fields. Among the features of this center are the lab area that encourages co-creation with business partners, a training center for customers, and an open innovation area.

New Development Building
To be completed in spring 2023
(Nirasaki City, Yamanashi)

To meet the growing demand for semiconductors, TEL is planning to add a new development building. The function to be fulfilled at this building will include the development of deposition and gas chemical etch systems that are critical to semiconductor manufacturing and the development of patterning and process integration technologies that are vital to the continued scaling of integrated circuits.

**Manufacturing**

TEL develops and manufactures equipment mainly at its manufacturing subsidiaries in Japan. One of our major strengths lies in our ability to control the entire production flow—from the early product development phase to design, manufacturing, and quality assurance phases. The integrated nature of our processes allows us to capture and incorporate our customers’ technological needs quite early in the development phase, resulting in timely delivery of the precisely needed products. Our production division is responsible for three types of activities: designing to order (i.e., customizing the equipment’s design specifications to meet the customer’s precise technological needs), designing of manufacturing processes (i.e., designing processes that assure efficient and high-quality production of equipment), and high-volume manufacturing (i.e., producing high-quality equipment in large volume and on schedule). As semiconductors and FPDs become more advanced, customers’ requirements are growing more sophisticated. To keep producing equipment of even higher quality, TEL has been promoting company-wide TPM* activities for over a decade. This initiative aims to thoroughly eliminate inefficiency and wastefulness from our manufacturing operations to improve productivity and influence the employees’ mindset and behavior. Both our employees at production lines and those in administrative positions participate in this movement, uniting the company in a pursuit of improvement and transformation.

To deliver the Best Products and Best Technical Service possible in a timely manner, TEL is constantly taking on the challenges of new production technology.

* TPM: Total Productive Management (Maintenance)

**Enhance production structure to swiftly prepare for future rise in demand**

**Tokyo Electron Technology Solutions**

New production building

Begun operation in July 2020
(Oshu City, Iwate)

Begun operation in August 2020
(Nirasaki City, Yamanashi)

**Sales**

Making sales starts with gathering information on customers’ needs and business trends and discerning what kinds of equipment and technologies are in demand. We at TEL consider it vital to adhere to the “customer first” principle, and we take full advantage of our rock-solid technical services to benefit our customers. It goes without saying that business does not come our way unless customers put trust in our salespeople. TEL has formed strong partnerships with our customers and is engaged in intense sales activities day by day in a global field. Sometimes our salespeople are asked to deliver new equipment that does not yet exist. In such cases, the sales department starts a development project jointly with the marketing and engineering departments. Then we go about making proposals to customers, building prototypes, installing and validating them, and so on. Often it takes over a year before the equipment is finally delivered to customers to complete the sale. The domain of sales involves a multitude of complex technologies from which a new technology proposal must be put together. Taking advantage of the challenging spirit and the respect for taking ownership that are innate to TEL’s culture, we will continue to provide the Best Products and Best Technical Service that can win the trust of our customers around the world.
Technical Services and Support

Committed to pursuing the Best Technical Service possible in a constantly changing business environment, TEL is ensuring that its technical services and support will bring satisfaction to all customers around the world. Anticipating the shifting trends and diversifying customer needs, we are also constantly upgrading its global support capabilities.

Advanced Field Solutions

At TEL, we refer to technical service and support of before-and-after delivery as “field solutions.” Our field solutions business takes advantage of an installed base of approximately 76,000 units—the largest in the industry. We also employ the latest technologies, including the TELeMetrics™ remote servicing solution, the latest wearable devices, and predictive maintenance based on machine learning. We assure high equipment availability through total technical services and support, including everything from delivery and installation of equipment to after-sales maintenance services.

TEL eMetrics

Using the latest wearable devices, our support center can remotely monitor and share real-time audiovisual data from our customers’ production sites.

Assorted Services to Address Diverse Needs

- Sales/procurement/warranty/total support services on new and refurbished equipment for small-diameter wafer processing (including 200 mm)
- Genuine spare parts supply and repair services
- Engineering services/support
- Equipment upgrade services

TEL eMetrics service connects the equipment installed at customers’ sites with TEL’s servers via communication lines, allowing us to remotely analyze the equipment data to improve productivity. The functionality of the equipment, deterioration of parts over time, and differences among equipment are monitored and analyzed from diverse angles using TEL’s unique technical know-how and professional tools, enabling us to identify any problems and offer appropriate solutions in real time. TEL eMetrics can help minimize equipment downtime and stabilize operations.
**Semiconductor Manufacturing Process**

**Deposition**
- Thermal Processing System
- Atomic Layer Deposition System
- Coater/Developer
- Single Wafer Deposition Systems

**Cleaning**
- Single Wafer Etch Systems

**Etching**
- Plasma Etch System
- Single Wafer Deposition Systems

**Interconnect formation**
- CMOS image sensor
- DRAM Working memory
- Logic Data processing

**Testing**
- Wafer Prober
- Single Wafer Test System

**Packaging/Inspection**
- Wafer Bonding
- Module Formation
- Packaging/Assembly

**TFT-LCD/OLED Display Manufacturing Process**

**TFT-LCD Display**
- TFT array process
- Display
- LCD display

**OLED Display**
- OLED display

**FPD Production Equipment**
- Virtually every semiconductor in the world
- FPDs are ubiquitous today as they are commonly used as an
- interface between humans and data in PCs, flat-screen TVs,
- and smartphones. Having gained considerable
- manufacturing experience through the semiconductor
- production equipment business, TEL has been applying its
- expertise to developing FPD production equipment. A wide
- range of products that TEL has produced to date has
- satisfied many FPD manufacturers with particular needs for
- high resolution, thinness, lightness, flexibility, low power
- consumption, larger screen size, and so forth.
Business Operations Spanning the World

TEL operates its business in countries and regions across the world. We are supporting the global electronics industry with its expansive business presence in Japan, the U.S., Asia, and Europe.

World Top 10 Semiconductor Production Equipment Manufacturers
CY2020 Revenue Ranking

<table>
<thead>
<tr>
<th>Company</th>
<th>Revenue (Billion US$)</th>
<th>Revenue (Billion yen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEL</td>
<td>16.36</td>
<td>1,399.1</td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td>242.9</td>
</tr>
</tbody>
</table>

Net Sales (FY2020) Billion yen

- Semiconductor Production Equipment: 1,315.2
- FPD Production Equipment: 83.7
- Others: 5.44

Net Income: 242.9

Composition of Net Sales by Region (FY2020)

- Japan: 20.4%
- Korea: 28.5%
- Taiwan: 17.9%
- North America: 10.9%
- Europe: 4.5%
- Others: 3.7%

TEL operates its business in countries and regions across the world. With the purpose of delivering technologies, support, and solutions more speedily to our customers in Japan and abroad as required, TEL has organized global structures for enhancing our response to customers. Precise understanding of the customers’ problems and requirements in product development and manufacturing allows timely feedback to our principal bases of operations, enabling streamlined delivery of high value-added products and services. Because we must keep responding to society’s needs as they arise, we put great value on building a relationship of trust with our customers.
Under the corporate philosophy of "We strive to contribute to the development of a dream-inspiring society through our leading-edge technologies and reliable service and support," TEL is pursuing sustainable operations in accordance with the requirements of corporate governance, legal compliance, and ethical conduct. At the same time, we are making medium- to long-term efforts to enhance value of corporate scope by contributing to develop and resolve issues for industry and society through our business operations.

**TEL’s Material Issues (Key issues)**

TEL has been making an all-out effort to overcome these challenges. TEL has identified four material issues that need to be addressed as priority concerns. These include the three pillars of its medium-term management plan—product competitiveness, responsiveness to customers, and higher productivity—as well as management foundation which encompasses such elements as the employees (who are the source of our growth), corporate governance, compliance, and human rights and environmental activities (that are essential to the sound and sustainable business operations).

**SDGs Initiatives at TEL**

To help attain the Sustainable Development Goals (SDGs) through its business, TEL has clearly defined the goals to be achieved in relation to each of the four material issues at hand.

**Material issues | Main initiatives | SDGs initiatives**

| Product competitiveness | - Build a sustainable society by creating innovative technologies  
- Provide products and services that are conscious of the environment  
- Collaborate with partner companies, consortia and academia | - Create strong next-generation products  
- Leading-edge research and development  
- DX Promote energy saving products |

| Responsiveness to customers | - Contribute to customer innovation  
- Promote sustainable form of production and consumption throughout product life cycle  
- Establish partnership with customers | - Become the best and sole strategic partner  
- Propose customer optimal solutions  
- Contribute to customers production of leading-edge devices  
- Ensure safety for customers  
- Customer satisfaction |

| Higher productivity | - Contribute to sustainable economic growth promoting productivity  
- Establish sustainable form of production and consumption by streamlined business operations and quality management  
- Create new values by collaboration with customers | - Constantly pursue higher management efficiency  
- Enterprise Resource Planning system  
- Operational efficiency and automation  
- Smart equipment  
- Improvement of quality in the value chain |

| Management foundation | Build a strong management foundation for underpinning our business activities | - Corporate Governance  
- Health and safety  
- Human rights  
- Risk management  
- Compliance  
- Employee growth  
- Diversity & Inclusion  
- Work-life balance  
- Supply chain management |

*TEL’s Sustainability Programs for the Continued Advancement of Society*