The TEL Group strives to understand the true needs to achieve customer satisfaction and secure customer trust while continuously improving quality and service.

4. Quality and Service

Feeling a strong sense of corporate social responsibility, we strive to gain the esteem of society and to be a company where our employees are proud to work.

8. Social Responsibility

The TEL Group gives the highest consideration to the safety and health of every person connected with our business activities as well as to the global environment.

7. Safety, Health and the Environment

The TEL Group builds optimal organizations that maximize corporate value in which all employees can realize their full potential.

6. Organizations

The TEL Group’s employees both create and fulfill company values, performing their work with creativity, a sense of responsibility, and a commitment to teamwork.

5. Employees

We will tirelessly take on the challenges of technological innovation to achieve continuous growth through business expansion and market creation.

3. Growth Philosophy

The TEL Group aims to contribute to the development of society and industry and to the enhancement of corporate value while continually pursuing profit.

1. Profit is Essential

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

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1. Profit is Essential

The TEL Group leads markets by providing high-quality products in leading-edge technology fields with a focus on electronics.

2. Scope of Business

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.

8. Social Responsibility

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1. Profit is Essential
The History of TEL and the Evolution of Semiconductor

The growth of TEL has always been in sync with the history of the semiconductor industry. For approximately half a century, TEL has tirelessly pursued the newest technologies and innovations. Following is a brief outline of TEL’s history.

### Evolutions of Semiconductor

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<td><strong>1960s</strong></td>
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<tr>
<td>1963</td>
<td>Tokyo Electron Laboratories, Inc. is established in Akasaka, Minato-ku, Tokyo with capital of five million yen invested by Tokyo Broadcasting System, Inc.</td>
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<td>1964</td>
<td>TEL acquires importing and selling rights for diffusion furnace manufactured by Thermco Products Corp. (U.S.) and begins sales</td>
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<tr>
<td>1964</td>
<td>TEL-Thermco Engineering Co., Ltd. begins domestic production of diffusion furnaces</td>
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<td><strong>1970s</strong></td>
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<tr>
<td>1972</td>
<td>Pan Electronic Inc. begins import and sales of microprocessors as an agent of Intel Corp.</td>
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<tr>
<td>1976</td>
<td>TEL-Thermco Engineering Co., Ltd. develops the world’s first high-pressure oxidation furnace.</td>
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<tr>
<td>1978</td>
<td>Tokyo Electron Laboratories, Inc. renamed Tokyo Electron Ltd</td>
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<td><strong>1980s</strong></td>
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<tr>
<td>1980</td>
<td>Listed on the Second Section of the Tokyo Stock Exchange</td>
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<tr>
<td>1983</td>
<td>Ranked 4th on the Nikkei Excellent Companies Ranking</td>
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<tr>
<td>1984</td>
<td>Listed on the First Section of the Tokyo Stock Exchange</td>
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<td><strong>1990s</strong></td>
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<td>1990</td>
<td>TEL marks a major move into development and marketing of FPD production equipment</td>
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<tr>
<td>1991</td>
<td>Top sales among semiconductor production equipment manufacturers attained for three consecutive years</td>
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<tr>
<td>1994</td>
<td>The first year for globalization: Begins establishing the structures for direct sales &amp; technical support in Europe and U.S.</td>
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<td>1999</td>
<td>Category of industry on the Tokyo Stock Exchange First Section changed from ‘Wholesale Trade’ to ‘Electric Appliances’</td>
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<td><strong>2000s</strong></td>
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<tr>
<td>2002</td>
<td>Participation in Albany NanoTech Program for industry-academia joint research promotion and support</td>
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<tr>
<td>2005</td>
<td>TEL receives Tokyo Stock Exchange’s Tenth Annual Award for Excellence in Disclosure for the second time since 1993</td>
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<td>2008</td>
<td>Overall ranking No.2 in the FY2007 Prime Minister’s Award for Excellence in Disclosure</td>
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<td><strong>2010s</strong></td>
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<tr>
<td>2010</td>
<td>TEL named one of the World’s Most Sustainable Companies</td>
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<td>2013</td>
<td>Concluded merger agreement with Applied Materials, Inc. (Merger dissolved in 2015)</td>
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<td>2014</td>
<td>Withdrawal from photovoltaic (PV) production equipment business</td>
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<td>2015</td>
<td>TEL makes Prime Minister’s Award in recognition of efforts for Industry-Academia-Government Collaboration for the second time since 2009</td>
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<td>2017</td>
<td>TEL cited for the Dow Jones Sustainability Index Asia Pacific Index for two years in succession.</td>
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<td>2018</td>
<td>TEL cited as Thomson Reuters’ “Top 100 Global Tech Leaders”</td>
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<td><strong>2016</strong></td>
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<td>2016</td>
<td>TEL cited as Thomson Reuters’ “2016 Top 100 Global Innovators List”</td>
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<td><strong>2017</strong></td>
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<td>2019</td>
<td>In 2019, TEL announced the launch of a new medium-term business strategy focused on the IoT era</td>
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<td>2020</td>
<td>In 2020, TEL set out to address the challenges posed by the IoT era, including the need for new technologies to support the Internet of Things (IoT)</td>
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<td><strong>2021</strong></td>
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<td>2021</td>
<td>In 2021, TEL continued to expand its offerings in the IoT market, including new materials and processes for the emerging device and system technologies.</td>
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By the 1980s, TEL had withdrawn from the consumer electronics export business and started concentrating its resources on importing semiconductor production equipment and other industrial machinery from the U.S., while exporting Japanese-made consumer electronics, such as car radios.

In 1983, when electronics equipment was still a budding industry, two young entrepreneurs who had left a major trading company founded Tokyo Electron Laboratories incorporated (today’s TEL). Convinced that semiconductors would revolutionize the entire industry, Takuo Kubo and Toshio Kodaka started to import semiconductor production equipment and other industrial machinery from the U.S., while exporting Japanese-made consumer electronics, such as car radios.

In the 1990s, TEL focused on solidifying its domestic group network by setting up subsidiaries to oversee its service and manufacturing operations. At the same time, overseas subsidiaries were set up around the world to build a direct sales and technical support network, in bid to become a serious player in the swiftly growing global market. TEL’s overseas sales exceeded domestic sales, illustrating its transformation into a global company.

Over 50 years after its inception, TEL formulated a new medium-term management plan comprising growth strategies aimed at reaching world-class profitability in 2015. TEL also renewed the corporate logo, taking the first step towards becoming the new TEL. As we enter the age of IoT and Big Data, the semiconductor and FPD production equipment market is now on the verge of a new era and TEL will aim even higher as a truly global company.
Building the Future of Mankind by TEL

TEL’s core business consists of two segments: the semiconductor production equipment business and the FPD production equipment business.

Semiconductors are used in a wide variety of equipment, ranging from consumer devices, such as smartphones, to satellites that orbit the earth at altitudes of 100 km or more. Although most people associate semiconductors with digital electronic products, semiconductors are found in many other objects, including automobiles, industrial machinery, home appliances, and public infrastructures. As we enter the age of the IoT, more and more things will be connected via the Internet, which means more and more high-performance semiconductors will be required. This is right up our alley, because TEL is in the business of ‘making machines that make semiconductors’.

Capitalizing on the technologies and insights that we have cultivated for over 50 years, TEL will continue supporting the advancement of society.

Ever since the invention of the transistor, demand for semiconductor-based products has shot up, leading to the development of numerous electronic devices. As a result, the semiconductor industry has been enjoying phenomenal growth. Applications for semiconductors will continue to widen in scope, bringing with them greater performance requirements for semiconductors.

TEL is reinforcing its existing strongholds while also exploring new fields of growth by enhancing its R&D capabilities, participating in national projects, and working with universities and firms in joint development programs. In the FPD market, TEL is leveraging the know-how gained in the semiconductor production equipment business to develop equipment for making FPDs used in TVs and mobile devices.

The connected world of IoT is driving the demand for semiconductors.
**Leading-edge Manufacturing Expertise and Outstanding Services**

TEL mainly operates two lines of business: semiconductor production equipment and flat panel display (FPD) production equipment. TEL develops diverse semiconductor production equipment that covers principal chip manufacturing processes, supplying these systems, along with excellent technical support, to semiconductor manufacturers worldwide. Many of the products that are developed, manufactured, and sold by TEL hold leading positions in the global market.

**Semiconductor Production Equipment**

Semiconductors are key components of a wide variety of digital products, including laptops, smartphones, digital cameras, automobiles, and household appliances. TEL develops diverse semiconductor production equipment that covers principal chip manufacturing processes, and supplies these systems to semiconductor manufacturers worldwide along with excellent technical support.

**COLUMN**

**What is the Nano-level World?**

The surface of semiconductors is intricately structured, with feature dimensions typically in the order of tens to hundreds of nanometers. This is a scale comparable to that of viruses and the diameter of the DNA double helix.

As nanotechnology-enabled semiconductor production equipment shrank the feature size of semiconductors, it became possible to make mobile devices such as laptops and smartphones thinner, faster, and lighter.

More about Nanoscale at: www.tel.com/museum/

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**Semiconductor Manufacturing Process**

**Pattern formation**

- Thermal Processing System
  - TEUNY PLUS™
  - Photoresist

**Isolation formation**

- Exposed gate oxide (silicon dioxide) is deposited
- A layer of dielectric material is finally deposited on top
- Contacts are formed to individual transistors
- Gates are formed after gate oxidation
- Patterned photomask is exposed to wafer surface according to the remaining photoresist
- A layer of dielectric material between the exposed dielectric layers is deposited
- The exposed dielectric material is etched
- Gates are formed after gate oxidation

**Contact formation**

- Resist is coated and exposed
- Photoresist is developed
- Photoresist is etched
- Resist is removed
- Wafer is diced into separate chips
- The chips are attached to packaging substrate or lead frame, and are sealed with ceramic or plastic

**Interconnection formation**

- Contact formation
- Vacuum deposition
- Electric Interconnection
- Equipment process

---
As we enter the age of the IoT, the need for a diverse array of semiconductor technologies, and for services that support them, will continue to increase. TEL is committed to providing high-level services to meet the needs of customers throughout the world and to make the maximum use of our products. TEL’s semiconductor production equipment has an installed base of 66,000 units around the world, and the company’s service engineers provide total support for the TEL products throughout their life cycle.

Flat Panel Displays (FPDs) have replaced Cathode Ray Tubes (CRTs) as the mainstream display device for personal computers, TVs, and many mobile devices, becoming an integral part of our daily lives. As the IoT develops, demand for FPDs will continue to grow, furthering innovation and development in the field of FPDs. TEL started developing FPD production equipment in the 1980s, leveraging its manufacturing know-how accumulated through its semiconductor production equipment business. Today, the company supplies high-performance equipment to numerous FPD manufacturers. The company’s principal products in this category include FPD coater/developer that coat and develop photoresist on a glass substrate, FPD plasma etch/ash systems that remove sections of thin film layers on a substrate to form desired patterns, and inkjet printing systems for manufacturing OLED panels that atmospherically discharge required amounts of organic materials onto large glass substrates. As FPD manufacturers face the challenge of delivering higher quality products at a lower cost while coping with ever-larger substrates, TEL will continue to meet these needs with outstanding products and technologies.

Services
TEL offers the following service items in any combination as requested by customers.

- Equipment support
  TEL’s knowledgeable and experienced field engineers ensure stable operations of the equipment.
- Parts supply and repair
  This service involves supply and repair of original spare parts.
- Life cycle extension
  This is a service for extending the life cycle of equipment that has been off the market for 5 years or more.
- Total equipment efficiency improvement and maintenance (TELeMetrics™)
  The target equipment’s operational data are remotely monitored and analyzed to enable solutions for the customer’s problems.

Field Solutions

FPD production equipment

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Advancements in display technologies

- **1980** Cathode ray tube (CRT)
- **2000** Liquid crystal display (LCD), Plasma display
- **2020** 4K, 8K, 3D, Organic light-emitting diode (OLED), Flexible display

Increased Capabilities and Life-Span extension of equipment already in place

The certified used equipment

Supporting operation to maximize the performance of TEL’s Products

TEL’s Worldwide Installed base of 66,000 units
(the industry-leading scale)
TEL conducts its business on a global scale, supporting the electronics industry in many countries and regions through its operations bases in Japan, the U.S., Asia, and Europe.

TEL's Worldwide Operations

TEL operates its business in 16 countries and regions, seeking to become the No. 1 player in the global market by developing and selling systems that meet the diverse demands of each locality.

Total: 34 companies / 16 countries and regions / 76 locations  (as of April 1, 2018)

**Europe**
- Tokyo Electron Europe
- Tokyo Electron Israel
- TEL Magnetic Solutions
- TEL Solar Services

**Asia**
- Tokyo Electron Korea
- Tokyo Electron Taiwan
- Tokyo Electron (Shanghai)
- Tokyo Electron (Shanghai) Logistic Center
- Tokyo Electron (Kunshan)
- Tokyo Electron Singapore

**Japan**
- Tokyo Electron (World Headquarters)
- Tokyo Electron Technology Solutions
- Tokyo Electron Kyushu
- Tokyo Electron Miyagi
- Tokyo Electron FE
- Tokyo Electron BP
- Tokyo Electron Agency
- Tokyo Electron Device

**U.S.**
- Tokyo Electron U.S. Holdings
- Tokyo Electron America
- TEL Technology Center, America
- TEL Venture Capital
- TEL Epion
- TEL NEXX
- TEL FSI
TEL’s Sustainability

**economic value x social value = corporate value creation**

Going forward, continue to work to resolve social issues and contribute to the achievement of sustainable development goals (SDGs) through our business activities in accordance with the Ten Principles of the UN Global Compact and RBA* code of conduct

*RBA: Responsible Business Alliance

**Environment**

Climate change, water, biodiversity, environmental management

**Social**

Human rights, employment and labor, health and safety, supply chain, local communities

**Governance**

Corporate governance, compliance, risk management

**Continue to be a company trusted by all stakeholders**

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**Net Sales**

- **Net Sales by Division (Consolidated)**
  - Semiconductor Production Equipment: 11,307
  - FPD Production Equipment: 2,043
  - Other: 750

- **Net Sales by Region (Consolidated)**
  - Korea: 33.5%
  - China: 14.5%
  - Japan: 13.2%
  - North America: 10.5%
  - Europe: 8.6%
  - S.E. Asia, Others: 4.3%
  - Taiwan: 15.4%

**Company Info**

- **Established**: November 11, 1963
- **Number of Employees**: 1,396 (non-consolidated) / 11,946 (consolidated)
- **Capital**: 54,961 million yen
- **Representative**: Representative Director, President & CEO, Toshiki Kawai

**Head Office**

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