Higher Productivity

- Promote the standardization and automation of operations and improve productivity along the entire value chain, such as through the development of an enterprise resource planning system and the integration of business systems in each division and the unification of databases
- Recognize the importance of quality management and strive to further improve business efficiency by implementing quality focus operations
- Implement quality improvement activities and continuously increase productivity throughout the entire supply chain through collaboration with suppliers

Promotion of Improved Productivity P. 26

Productivity Improvement in the Value Chain P. 27

SDGs Initiatives

- Promote productivity, continuously increase management efficiency, contribute to the development of the industry and society and contribute to sustainable economic growth
- Increase economic productivity through diversification, technological improvement and innovation

- Promote streamlined business operations and quality management throughout the value chain, ensuring sustainable forms of production and consumption
- Use environmentally appropriate chemical substances and reduce waste

- Continuously increase productivity throughout the entire supply chain by strengthening global partnerships with suppliers

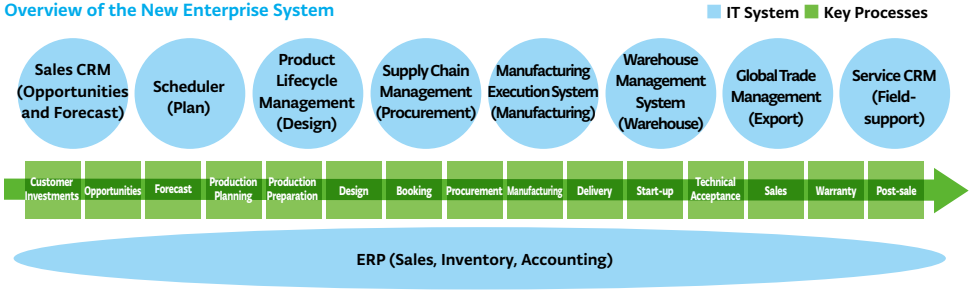
Promotion of Improved Productivity

Continuous Improvement of Business Operations

Tokyo Electron is introducing a new enterprise system (ERP[1]) to further improve productivity and quality. The new ERP, being operated across operational and national boundaries, is aimed at creating the following five benefits: (1) compliance with the new revenue recognition standards[2] in Japan; (2) management decision-making with quick response to change; (3) large improvements in business operation efficiency; (4) utilization of globally integrated information with an eye toward digital transformation[3]; and (5) realization of ultimate work style reform.

In fiscal year 2022, we started with introduction of the new ERP at headquarters, and we completed (1) compliance with the new revenue recognition standards. From fiscal year 2023 onward, we will take full advantage of the knowledge gained in the process of introducing the system at headquarters, and gradually introduce the system at manufacturing sites in Japan and at overseas subsidiaries. In addition, with the aim of realizing a globally integrated system, we will work with our partner companies to improve operations, increase efficiency, and develop functions to further enhance system performance.

Overview of the New Enterprise System



1 ERP: Enterprise Resource Planning. A system that integrates the core business operations of an enterprise, such as accounting, personnel, production, logistics and sales, for better efficiency and centralized information.
2 New revenue recognition standards: New Accounting Standard for Revenue Recognition that establishes rules for calculating sales in financial statements, and which became applicable to listed companies, etc. from April 2021
3 Digital transformation: Refer to Strengthening of Product Competitiveness through Digital Transformation (DX) on p.18 and refer to Higher Productivity through Digital Transformation (DX) on p.26

Initiatives for Higher Productivity

As a manufacturer of semiconductors and flat panel display production equipment, we are committed to continuously improving productivity while remaining focused on safety and quality in operations along the entire value chain.

Specifically, under the slogan "Safety First[1]," we are striving to improve the safety and work environments of every person connected with our business activities, and at the same time, we are building quality management systems and pursuing quality improvement throughout the value chain in order to understand the true needs of our customers and to achieve the world's best quality. We are also conducting company-wide activities for compliance with safety and environmental laws and regulations and to make software development more efficient and smarter.

In manufacturing operations, our current initiatives include labor saving in production through a system that links BOM[2] to MES[3], and transforming production performance into a Digital Twin[4].

Furthermore, to respond swiftly to customer requests and market fluctuations, we have built a production system that centralizes all information related to production, and have developed an IT infrastructure with manufacturing execution system (MES) and a supply chain management (SCM)[5] system.

By utilizing the wide range of data aggregated through these systems in each business operation, we are working on optimizing and streamlining production planning as well as visualizing delivery dates of parts by strengthening information coordination with our suppliers. We are also promoting comprehensive improvement of business productivity by achieving stronger coordination between sales planning and production/procurement/inventory planning.

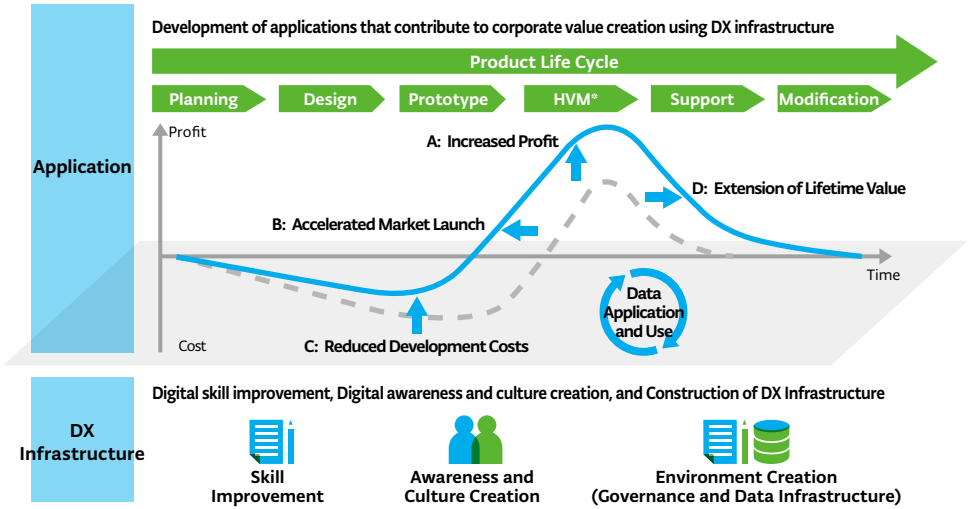
Additionally, in our manufacturing and logistics operations, where we deal with a wide variety of components, we are also working on labor savings and efficiency improvements by establishing automated warehouses, introducing a warehousing navigation system and promoting automated inspections.

1 Safety First: Company slogan that prioritizes the safety of every person connected with our business activities
2 BOM: Bill Of Materials. This shows the hierarchical structure of the product and includes basic information of each part, including which parts are used to assemble the product.
3 MES: Manufacturing Execution System. A system for understanding and managing production processes and for providing instructions and support to workers.
4 Digital Twin: A "Twin in digital space" refers to a technology that copies and replicates various data collected from physical objects in the real world onto a digital space.
5 Manufacturing execution system (MES) and a supply chain management (SCM): Refer to Continuous Improvement of Business Operations on p.26

Higher Productivity through Digital Transformation (DX)

We aim to enhance product competitiveness and improve capital efficiency in various operational processes—from the product planning stage to maintenance—by promoting DX.

Image of DX Usage



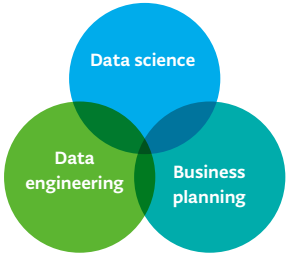
* HVM: High Volume Manufacturing

In our DX activities, regarding the 13 risks*, we implement a risk management PDCA cycle that includes formulating and executing measures to minimize these risks, monitoring the state of management and supporting and promoting risk management activities of the various departments.

We are building a system that allows appropriate risk management at the right time through real-time monitoring of risks, control measures and implementation state across the entire Group while collaborating with the overseeing organizations in our headquarters. The purpose is to conduct fast risk detection and decision-making from the perspectives of data and digital technology utilization.

Furthermore, we are also making clear the human resources necessary for the promotion of DX and are formulating and training plans to develop the respective skills needed. In parallel, we are also carrying out human resource development to provide all employees with a minimum level of DX knowledge.

Skill Training Plan for DX Promotion



Data science	Ability to understand and utilize data science, such as data processing, AI and statistics
Data engineering	Ability to give meaningful shape to data science for our efforts to create corporate value, and to implement and operate in line with targets
Business planning	Ability to evaluate issues and their context, implement measures to resolve them and link this to business (earnings)

Systematically train human resources to utilize data science in our business

We will continue to focus on the promotion of DX and utilize digital technology to improve productivity in everything from accelerating the speed of development, improving productivity and quality and enhancing business efficiency to reforming work styles.

* 13 risks: Risk Management Initiatives on p.37

Productivity Improvement in the Value Chain

Approach to Quality

We define our approach to quality in the following way: "The Tokyo Electron Group seeks to provide the highest-quality products and services. This pursuit of quality begins at development and continues through all manufacturing, installation, maintenance, sales and support processes. Our employees must work to deliver quality products, quality services and innovative solutions that enable customer success." We strive to implement this policy.

Quality Policy

1. Quality Focus
   Focusing on quality to satisfy customers, meet production schedules and reduce required maintenance even with temporary cost increases.
2. Quality Design and Assurance
   Building quality into products and assuring in-process quality control, from the design and development phase throughout every process.
3. Quality and Trust
   When a quality-related problem occurs, working as a team to perform thorough root cause analyses and resolve problems as quickly as possible.
4. Continual Improvement
   Ensuring customer satisfaction and trust by establishing quality goals and performance indicators and by implementing continual improvement using the PDCA cycle.
5. Stakeholder Communication
   Listening to stakeholder expectations, providing timely product quality information and making adjustments as needed.

We strive to implement self-process assurance systems[1] by carrying out strict quality-related risk management and development/design inspections beginning at the development stage, and also by ensuring thorough verification of customers' operations using simulations. We have also built an important component traceability system to strengthen our information environment.

Specifically, to prevent various types of non-conformances, we built a system that allows One Platform[2] to view information such as past problems, adjustment values used during manufacturing and assembly and important component inspection information from suppliers, and have successfully strengthened our risk management (FMEA[3]).

By thoroughly implementing these self-process assurance system and prevention measures, it creates time for employees to focus on high-value-added business operations and promotes initiatives for Shift Left[4] (front-loading).

1 Self-process assurance systems: Refer to Ensuring Self-process Assurance Systems and Promoting Shift Left on p.28
2 One Platform: A platform that makes it possible to easily view multiple different systems as seamless information sources, in order to effectively and efficiently achieve traceability. Refer to Initiatives for Higher Productivity on p. 26
3 FMEA: Failure mode and effects analysis. A method to identify, prevent and mitigate risks in advance.
4 Shift Left: Refer to Shift Left on p.16 and refer to Ensuring Self-process Assurance Systems and Promoting Shift Left on p.28

Management System

To provide consistent, high-quality products, we have built and are implementing quality assurance systems under the leadership of the CEO. All manufacturing companies in the entire Group have attained certification in the latest quality management system, ISO 9001. In addition, we conduct regular internal audits as well as neutral and fair audits by third parties for each manufacturing company of the Group to contribute toward maintaining and improving our quality management systems.

ISO 9001 Certified Plants and Offices

Company Name	Plant/Office Name	Certification Date
Tokyo Electron Technology Solutions	Fujii Office/Hosaka Office	September 1994
	Tohoku Office	December 1994
Tokyo Electron Kyushu	Koshi Office	March 1997
TEL Magnetic Solutions	—	November 2009
Tokyo Electron Miyagi	Taiwa Office	September 2012
Tokyo Electron Korea	Balan Plant	September 2011
TEL Manufacturing and Engineering of America	Chaska Office	March 2013
Tokyo Electron (Kunshan)	—	May 2018

Process Improvement Activities

The production sites of our customers require limited variations in quality between equipment, accurate process repeatability and high productivity. To provide products that match such customer needs, we focus on process improvement activities (PCS[1]) using a statistical method.

We create control diagrams for the information of various types of critical components (components directly in contact with wafers and components that directly affect the process of systems, such as components that transfer mechanical, thermal, electrical or electromagnetic energy to wafers) and analyze variations to quickly detect and respond to changes in manufacturing processes. By undertaking such PCS activities together with suppliers handling specific critical components, we work on the suppression of component quality variability and maintenance/improvement of manufacturing processes that produce quality products to help provide products surpassing customer expectations.

In addition, manufacturing processes handling new critical components need constant review and improvement. Our products comprise several tens of thousands of components, and the task to select specific components from these and carry out regular aggregation and analysis require many man-hours.

To optimize and streamline this task, we reexamine our operational flow, including the adoption of automation, and improve our systems by collecting information from customers, holding discussions among our manufacturing sites in Japan and interviewing our suppliers. By continuously carrying out these activities that are based on the concept of Shift Left, we are striving to improve our productivity further.

Example Initiatives

At Tokyo Electron Technology Solutions (Tohoku), design of experiments[2] based on statistics is used to establish quality metrics for critical components and the level of quality activities is being improved together with suppliers.

The best quality metrics established using the designs of experiments are set as the targets. Conditions that give rise to variations in inspection, adjustment and other values in the manufacturing processes of critical components are strictly managed using PCS activities to seek accuracy and stability in the manufacturing processes.

In the future, we will promote the automation of processing—from collection to assessment—of suppliers' data regarding quality and detect the state of quality in real time to further improve the manufacturing processes of critical components.

1 PCS: Process Control System
2 Design of experiments: A branch of applied statistics that aims to design efficient experimental methods and properly analyze the results

Ensuring Self-process Assurance Systems and Promoting Shift Left

In order to improve the quality of products, it is important to prevent non-conformance from occurring in upstream processes and to ensure thorough quality control in each process so that nonconforming products—if they occur—are not allowed to flow into later processes. From this perspective, we promote activities focused on self-process assurance systems. In particular, we aim to further improve quality by implementing thorough risk detection and mitigation measures (FMEA[1]) from the initial stages of product design, as well as carrying out thorough inspections in each process and conducting verification using simulation.

These activities for in-process quality control make it possible to create high-value-added technologies and products in the upstream processes by improving the precision of each process and reducing reworking costs[2], and at the same time, lead to the promotion of the Shift Left[3] concept.

We are also promoting Product Lifecycle Management (PLM) by using in-process quality control to comprehensively manage and analyze all processes from product planning, development, design and production through to service in an effort to facilitate the earlier release of products, enhance operational efficiency, improve quality and reduce costs.

1 FMEA: Refer to Approach to Quality on p.27
2 Reworking costs: Costs incurred by going up the chain of processes and reworking when there is non-conformance
3 Shift Left: Refer to p. 16

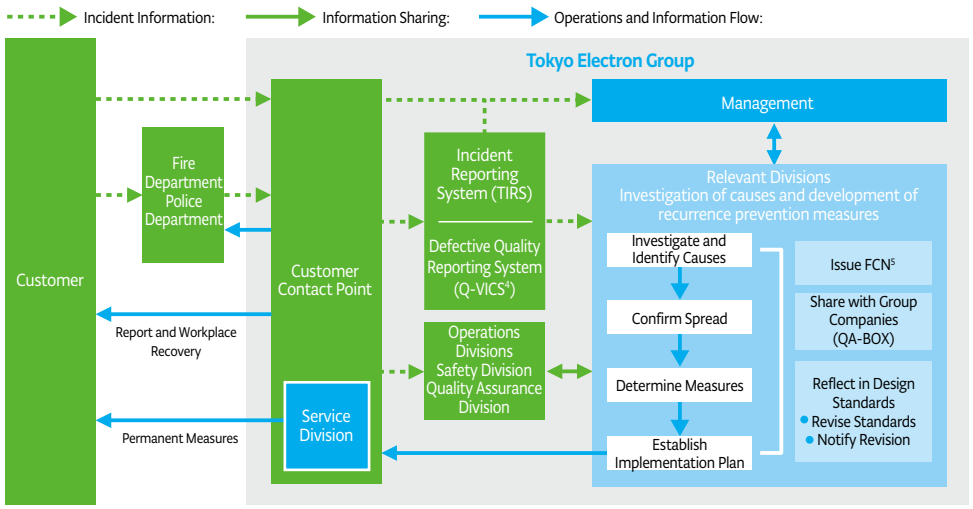
Measures to Prevent Quality Problems from Occurring and Recurring

To comply with ISO and EN[1] safety standards and achieve higher safety levels, we have established its own design rules for each product. At the same time, we have developed systems for manufacturing products, which include safety considerations. We also have other systems in place for responding to issues such as equipment design and production non-conformance and any occupational incidents.

In the event of an incident, we use our TIRS[2] incident reporting system to distribute information to safety and quality personnel in each division and officers and management, including senior management. An incident investigation is also conducted immediately to identify the cause and plan preventive measures.

We use a proprietary system called QA-BOX[3] to share information on equipment quality and any major non-conformance across all quality departments in accordance with our operating rules. Measures obtained from the results of an incident investigation are promptly applied, not only to the problem equipment but also to relevant equipment operated by other customers. At the same time, after finding the root cause, revisions are also made to the current design standards and processes to perpetually prevent the occurrence of major non-conformances.

For departments that become subjects of incident investigations, we validate repercussions to other equipment and commonalities and share the issues and countermeasures at regularly scheduled QA-BOX meetings together with the heads of quality assurance divisions. This allows us to examine various approaches to prevent similar non-conformances. The common policies determined at the regular meetings are quickly deployed across the entire Group and reflected in the respective equipment. This helps to reduce non-conformances caused by equipment.



1 EN: European Norm. Uniform standard for the European Union complimenting parts of technical standards not stated in European Commission directives ("New Approach" directives)
2 TIRS: TEL Incident Report System
3 QA-BOX: Tool for the sharing and horizontal deployment of important quality-related information within our Group companies
4 Q-VICS: Quality Valuable Information Chain System
5 FCN: Field change notice. Refers to the general recall notice

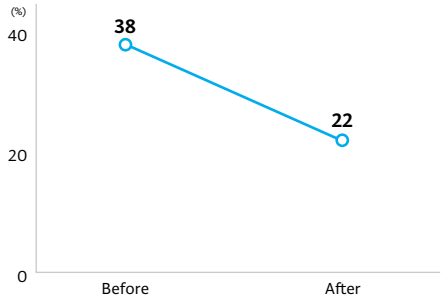
Initiatives with Suppliers

Continuously improving quality based on strong partnerships with suppliers is essential for providing high-quality products quickly to the market. Since fiscal year 2001, we have conducted our unique Supplier Total Quality Assessments (STQA) in an effort to ensure our suppliers properly understand the level of quality expected from them.

Before starting a new business with suppliers, we conduct an STQA via self-assessment to evaluate their product quality, costs and information security. The assessment also includes their corporate social responsibility initiatives, including human rights, ethics, safety, and the environment. If a risk is identified in this assessment, we visit the supplier and confirm the area of non-conformance on-site. Once our approaches to quality and other important related issues have been shared with the supplier, we request that they plan and implement improvement measures and provide continuous support until all of them have been completed. In addition, we also conduct audits once every three years for suppliers who handle important components and for suppliers where quality issues have been found.

We also hold regular meetings with the leaders of various manufacturing sites in Japan who use STQA to share supplier-related information and discuss measures to resolve issues.

Component Appearance Defect Rate



Example Initiatives

The quality assurance division of Tokyo Electron Technology Solutions is strengthening the acceptance inspection process to allow signs of component non-conformance to be discovered early. Component appearance defects from scratches and dents make up approximately 40% of all non-conformances discovered during acceptance inspection. As a result of efforts to improve and strengthen component appearance, such as working with suppliers to find the causes and selecting appropriate packaging materials, the target value of 130 ppm (130 nonconforming products in every one million products) was achieved in fiscal year 2022 even though the number of shipments increased. Going forward, we will continue to strengthen cooperation with suppliers and undertake continuous improvement activities.