



Solutions that create value for customers

Systems for creating value for customers

By developing and strengthening close relationships with customers through a customer account system, Tokyo Electron (TEL) is promoting a deeper understanding of customer needs and linking this to the creation of product development and service businesses in the seamless collaboration with its business divisions and development divisions. Moreover, in order to take a more comprehensive and inclusive approach to meeting customer needs, in cooperation with our corporate divisions we are also promoting development activities on common themes across the multiple products and functions.

To promote these activities and to improve their efficiency, we are working to build globally unified systems and operations. For the service division in particular, we have established the Global Service Committee. Service leaders from each business unit and each overseas subsidiary regularly gather to promote One-TEL service activities. Discussions by the Global Service Committee cover all manner of subjects, including improving the technical skills and interpersonal skills of the more than 3,000 field engineers worldwide, the localization of start-ups, improving work efficiency using the work-time management system, and the concept of the Total Support Center. Based on these discussions, the Global Field Division takes a central role in promoting the sharing of information and knowledge between accounts and between overseas subsidiaries, and in the development of optimal operational methods.

In addition to helping create value for customers by improving our ability to make proposals and solve problems to meet customer needs, we are also contributing to create value for TEL by improving the speed and efficiency of our business.

Development capabilities beyond product fields

Along with the advancement of scaling and performance of semiconductors, innovative solutions to optimize overall manufacturing processes at customer sites are highly required. TEL has been working on the challenge by taking the advantage of high technological competency as an equipment manufacturer deploying a product lineup featuring a variety of products.

During fiscal year 2018, we have established a Process Integration Center (PIC). In response to the growing technological requirements essential for building a more enriched and prospective society—such as AI and automated driving, widely spread of IoT solutions—PIC is engaged in extensive research on innovation by integrated process technologies based on a combination of multiple processes, leading-edge equipment, and novel materials. The semiconductor trend to 3D structure is one of those innovations. 3D structure is micro-fabricated with complex elements built in a vertical direction on a wafer, enabled by numerous repetition of multiple processes such as thin film deposition, lithography, etch, and cleaning. Utilizing our comprehensive strength with an extensive product lineup featuring a variety of products, we are contributing to the evolution of overall semiconductor manufacturing technology.

With the coming of the Fourth Industrial Revolution, a variety of objects are connected to the internet, and analysis and utilization of big data through AI is advancing. Applications for semiconductors and flat panel displays are expanding and customer needs for semiconductor production equipment are diversifying and increasing in complexity. Against this background, it is essential to accurately grasp customer needs in order to provide optimal products and services. Since the establishment of Tokyo Electron (TEL), we have positioned customer satisfaction as a key management theme, and have endeavored to build firm relationships of trust with our customers. Furthermore, TEL proposes integrated solutions as a manufacturing equipment company deploying multi-products. We continue to aim to contribute to value creation for our customers so that they will see us as an irreplaceable strategic partner.

Priority themes



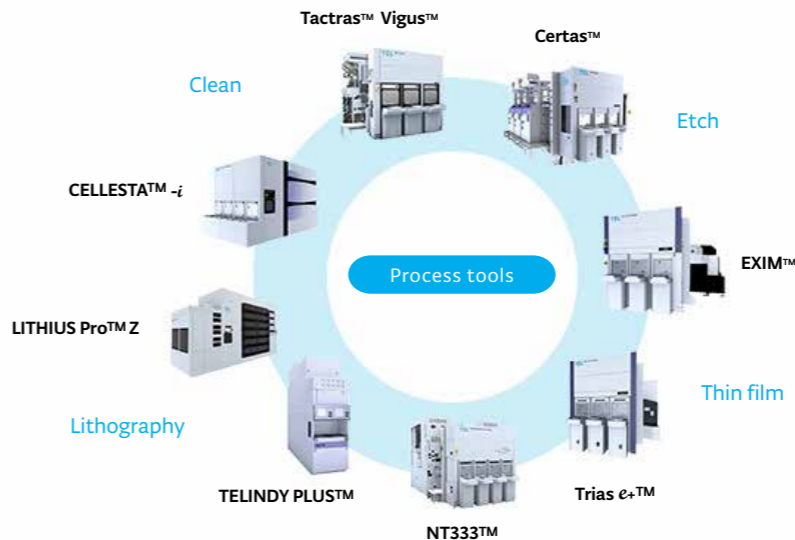
Relevant SDGs



Industry, innovation and infrastructure



Responsible consumption and production



Initiatives for integrated proposals

Knowledge management

TEL promotes company-wide knowledge management.¹ By sharing knowledge and connecting different divisions and overseas sites, we are working to share best practices to deliver high-quality services to our customers. In the area of field service, we have built a system that centralizes information on past equipment issues and allows users to search that information on demand. The system has made it easier to retrieve knowledge on issues, and causes of issues can be predicted with greater accuracy. This has enabled us to respond to customers more quickly and more efficiently.

¹ Knowledge management: Management approach to promote internal company sharing of tacit knowledge held by individuals, in order to encourage innovation and to improve overall productivity

Work-time management

We have adopted a global timesheet covering about 3,000 field engineers worldwide. Under this system, work involved in starting up equipment, repair work and other tasks are managed by entering the type of task performed and the time required for that task in accordance with certain rules. Introducing this system has allowed us to visualize services. By analyzing the work data accumulated through the global timesheets, we are intent on improving the efficiency of our work and the quality of our service.

Skills management

With a goal of upgrading the skills of field engineers and improving the competitiveness of our services, we built a company-wide skills management system in accordance with standards established by SEMATECH (a U.S. consortium for the joint development of semiconductors). The system became operational in fiscal year 2018. By understanding the individual skills of our field engineers, we have been able to systematically upgrade the skills of our company as a whole. Moreover, since the skills of each engineer can be ascertained objectively, we are able to place our human resources to match the needs of our customers.

Meeting diverse needs

With the dawning era of the Internet of Things (IoT), demand for semiconductors is becoming progressively polarized. Amid advances to miniaturize semiconductors and to further increase their density for MPU² and DRAM,³ demand is also increasing for general-purpose semiconductors in a wide range of fields, such as medicine, finance, transportation and manufacturing. Extending the life cycle of products is another challenge, evidenced by demand for the long-term stable operation of semiconductors for automobiles and industry.

In view of these trends, TEL has developed an organizational structure focused on the aftermarket. We have developed systems to better understand the needs of our customers, and to share them internally as feedback so they can be reflected in product development.

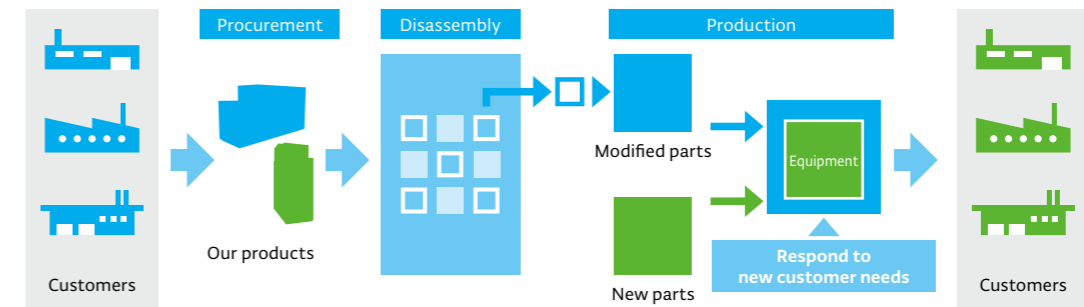
Based on these systems, a major pillar of our business expansion has been the supply of equipment, centering on 200 mm equipment. Leveraging our strength in having delivered more than 66,000 machines as one of the largest suppliers in the industry, we procure equipment from end users or from the used equipment market and sell them as TEL-certified used equipment. We are also putting a great deal of effort into remanufactured equipment. Remanufactured equipment refers to equipment built by taking the TEL used equipment we have procured and disassembling them into modules, modifying those parts that are still usable, and adding new parts where they are needed. Doing so enables us to provide equipment according to customer demand.

² MPU (Microprocessing unit): Microprocessors or semiconductor chips that mainly provide the computing power for computers
³ DRAM (Dynamic random access memory): A type of semiconductor storage element for computers, etc.

For certain equipment that customers want to purchase even though it may have been released 20 or more years ago, we offer remodeled equipment. Without changing the function of the equipment and by replacing old units and parts with the latest components, we can meet the demands of customers who want to continue using their equipment for a long time, while maintaining compatibility with existing processes.

We also offer a new upgrade kit, whereby the functions of latest 300 mm equipment are added to refurbished equipment. Doing so has enabled us to make productivity and other performance improvements that outstrip existing models.

Flow of remanufactured equipment



Executive message

The era of the Internet of Things (IoT) has broadened the range of semiconductor applications, and has further diversified the demands on manufacturing equipment. In response to such needs, we have developed our field solutions business based on more than 60,000 delivered equipment. Our service commitment is to provide service that all customers can use our equipment with peace of mind. We will enhance infrastructure that maximizes the performance of equipment, and through the reuse and recycling of products and through high-value-added maintenance services, we will support the stable operation of equipment for all generation utilized in a variety of applications. This business is critical for TEL's medium- to long-term growth, and I am confident it can also be of benefit to society by reducing environmental impact.



Kiyoshi Sunohara
 Senior Vice President and General Manager,
 Field Solutions Business Division

Ensuring safety for customers

Information provision

Tokyo Electron (TEL) is committed to providing relevant safety information to customers to enable the safe handling of products.

All products purchased by customers come with a standard TEL Safety and Environmental Guidelines manual. This manual describes the potential risks associated with the use of our products together with the methods for averting those risks, divided into such categories as chemical, electrical, mechanical and ergonomic. It also describes safety measures applied to products and recommended methods for product disposal. The manual has been translated into 10 languages to ensure that our customers around the world can accurately understand the information and use our products safely. To assist customers in using TEL equipment safely, we also provide a manual detailing the procedures for avoiding risks associated with the relevant equipment and for ensuring its correct operation and maintenance.

Close attention must also be paid to safety when delivering TEL products that involve the use of hazardous chemicals or high voltage electricity. Particularly when delivering our products to a customer's new production line, we check their facilities, equipment and workplace safety standards beforehand according to our internal rules to ensure a safe environment.

Training

TEL provides its customers with training on equipment operation and maintenance procedures to ensure they are able to handle TEL products correctly and safely. Centered around our manufacturing sites, we have established training centers worldwide, with approximately 80 instructors conducting practical training courses using actual TEL equipment. So that the training we provide is always of the highest quality, we use our own certification system for instructors to ensure that training is delivered by personnel recognized as having the necessary skills. In addition to practical training, we also provide web-based training and on-site training at customer sites. In fiscal year 2018, we provided customers with a total of approximately 9,500 days' worth of training.

At the end of a training course, TEL also surveys participants to collect and analyze their feedback on our training programs and equipment. Based on the survey results, we implement improvements in an effort to develop an enriched training environment.



* 10 languages: Japanese, English, German, French, Italian, Dutch, Russian, Korean, Traditional Chinese, and Simplified Chinese

Improvement of customer satisfaction

Customer Satisfaction Survey

Tokyo Electron (TEL) conducts a Customer Satisfaction Survey (TEL CS Survey) every year, with the goal of making continual improvements based on customer feedback. The survey started in 2003, aimed at just a limited number of departments. It was expanded to include all semiconductor production equipment departments in 2014, and later the FPD production equipment division and overseas subsidiaries in 2016, making it into a company-wide undertaking.

Once a year, customers are sent a questionnaire with specific questions designed to lead to practical improvements. Results from the survey are given as feedback to customers. In addition, results analyzed by product, account (customer) and function (software, development, etc.) are shared with the relevant divisions for action to be taken, thus leading to interdivisional improvement activities. Improvements are also constantly made to all aspects of the actual survey method, from the questions asked, to the analytical methods and overall operation of the survey activities.

In the customer satisfaction survey for fiscal year 2018, responses were received from approximately 1,300 individual customers which is 62.1% of all customers. We received 3 points* or higher on 64.9% of all questions asked. Based on this valuable feedback and analytical results, our entire company will work to drive improvements initiated from the customer perspective.

* On a 4-point scale, 3 points or higher represents "Very Satisfied or Satisfied"



Improvement example

Results of the Customer Satisfaction Survey brought to light a certain issue that would not have ordinarily been identified. In response, the relevant departments and overseas subsidiary took the lead in implementing improvements, backed by the cooperation of all TEL departments. We responded to inquiries with greater accuracy and speed, we delivered products and got it up and running more quickly, and we revised our allocation of field engineers. These efforts were reflected in the improved evaluation given by the customer the following year. A request received from another customer suggested that they wanted more enhanced support for software operated across multiple pieces of equipment. We implemented a variety of measures, and consequently, the evaluation score received from that customer also improved.