



Environmental Report 2003

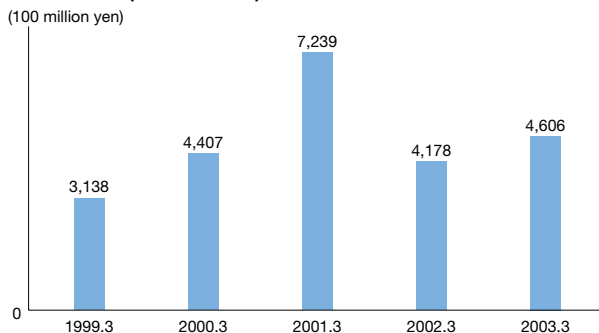
Environmental Sustainability Report 2003

TOKYO ELECTRON LIMITED

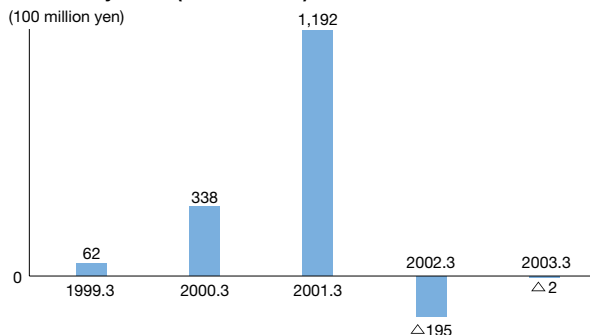
Corporate Profile

Company name: Tokyo Electron Limited (TEL)
 Address: TBS Broadcast Center, 3-6 Akasaka 5-chome, Minato-ku, Tokyo 107-8481
 Phone: +81-3-5561-7000
 Representative: Kiyoshi Sato, President & CEO
 Established: November 11, 1963
 Capital: ¥47,223,000,000 (as of March 31, 2003)
 Main products: Production equipment for semiconductors and flat panel displays (FPDs), computer network-related products, electronic components
 Employees: 1,351 (as of March 31, 2003)
 Group employees: 10,053 (as of March 31, 2003)
 Sales (consolidated): ¥460,580,000,000 (fiscal year ending March 2003)

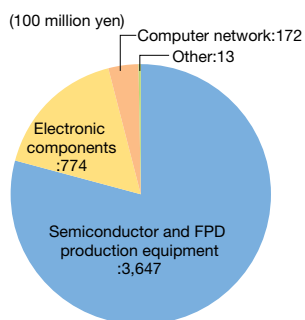
Net Sales (Consolidated)



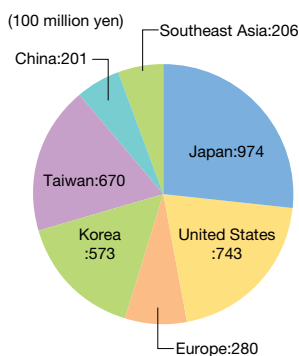
Ordinary Profit (Consolidated)



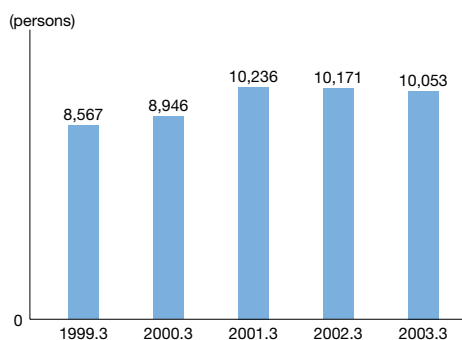
Net Sales by Division (Consolidated)



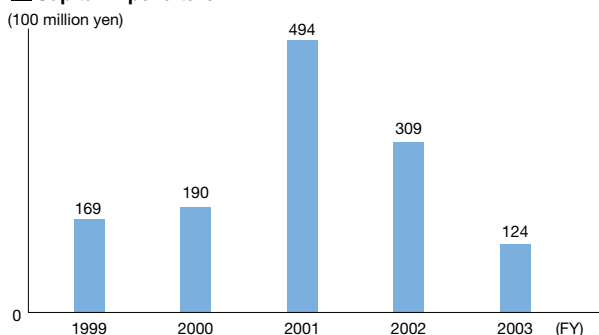
Sales by Region (Semiconductor Production Equipment)



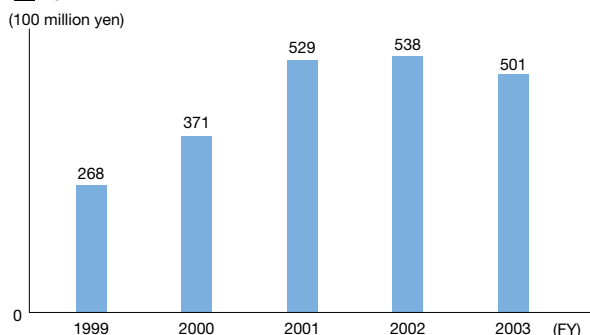
TEL Group Employees



Capital Expenditure



R&D



CONTENTS

Corporate Profile 1
 Contents, Editorial Policy, Scope 2
 Toward a Sustainable Society 3
 Business of Tokyo Electron 5
 TEL and Environmental Impact 7
 Environmental Targets and Results 9
 Environmental Activities of TEL Group Companies ... 10

Eco Products

Reducing the Environmental Impact of Products 11
 Green Procurement 14

Eco Factory

Waste Reduction and Recycling 15
 Energy Conservation 17
 Resource Conservation 18
 Chemical Management 19

EHS Management

EHS Management System 21
 Environmental Accounting 24
 Health and Safety 25
 EHS Education 27
 Communication with Stakeholders 28
 Societal Contribution 29
 Comments from Stakeholders 31
 Site Report: Kumamoto and Koshi Plants 32

Environment and Safety Milestones

- May 1994 Standardization, Environment and Safety Center (Environment, Health & Safety Center) established
- Mar. 1996 Product Safety Subcommittee (TEL Product EHS Technical Committee) launched
- Apr. 1996 Environmental Subcommittee (TEL EHS Committee) launched
- Dec. 1997 Sagami plant acquires ISO14001 certification
- Feb. 1998 Tohoku plant acquires ISO14001 certification
- Mar. 1998 Saga plant acquires ISO14001 certification
- Mar. 1998 Kumamoto and Koshi plants acquire ISO14001 certification
- May 1998 Yamanashi plant acquires ISO14001 certification
- Sep. 1998 TEL Group Credo and Principles on Environmental Preservation established
- Nov. 1998 TEL Group Credo and Principles on Safety & Health established
- June 1999 Safety First policy established
- Aug. 1999 Ozu plant acquires ISO14001 certification
- Dec. 1999 "Health, Safety and the Environment" added to the Management Philosophy
- Apr. 2000 Environmental accounting introduced
- Apr. 2000 Unified safety training system "Safety 2000" implemented
- Dec. 2000 First TEL Environmental Report published
- Apr. 2001 Product life cycle assessments begin
- Oct. 2001 Green procurement launched
- Oct. 2001 Environmental education introduced in facilities not yet certified under ISO14001
- Apr. 2002 Original "TEL Eco-Activity" (environmental management system based on ISO14001) begins

Editorial Policy

This is the fourth Environmental Report of Tokyo Electron (TEL). Our first priority has been to make this report comprehensive and easy to read, in order to help readers gain an understanding of our initiatives relating to the environment, health and safety, as well as the achievements of our activities to contribute to society during FY 2003. Because TEL has wide-ranging business operations, we hope that this report will be widely read and that it will help further enhance our communication with all of those with whom we do business. We welcome your opinions and comments on this report so that we may reflect them in our future editorial policies.

The Ministry of the Environment's Environmental Reporting Guidelines (FY 2000 version) and the guidelines of the Global Reporting Initiative, an organization that sets international guidelines for corporate reporting, helped to guide the creation of this report.

In this report, the unit tons refers to metric tons (1,000kg).

Scope

Organizations covered: This report covers the activities of the entire Tokyo Electron Group (as of August 2003).

Japan

- Tokyo Electron Ltd., Tokyo Electron Tohoku Ltd.,
- Tokyo Electron AT Ltd., Tokyo Electron Kyushu Ltd.,
- Tokyo Electron EE Ltd.,
- Tokyo Electron Software Technologies Ltd.,
- Tokyo Electron FE Ltd., Tokyo Electron Device Ltd.,
- Tokyo Electron Leasing Co., Ltd., Tokyo Electron Logistics Ltd.,
- Tokyo Electron Agency Ltd.

North America

- Tokyo Electron America, Inc., Tokyo Electron Massachusetts, LLC,
- Tokyo Electron Arizona, LLC, Supercritical Systems, Inc.,
- Timbre Technologies, Inc.

Europe

- Tokyo Electron Europe Ltd., Tokyo Electron Italia S.p.A.,
- Tokyo Electron Deutschland GmbH, Tokyo Electron Nederland B.V.,
- Tokyo Electron Ireland Ltd., Tokyo Electron Israel Ltd.,
- Tokyo Electron France S.A.R.L.

Asia

- Tokyo Electron Korea Ltd., Tokyo Electron Taiwan Ltd.,
- Tokyo Electron (Shanghai) Logistic Center Ltd.

Period covered: This report contains data for the period April 1, 2002 to March 31, 2003 (FY 2003).

Areas covered: This report addresses TEL environmental management, as well as social and economic aspects of corporate societal contributions and other activities.

We will publish the Environmental Report of TEL annually.

Toward a Sustainable Society

We are committed to doing business in a way that moves us toward a sustainable society. In this context, we give a high priority to the environment, health and safety.



A handwritten signature in black ink, which appears to read "Kiyoshi Sato".

Kiyoshi Sato
President & CEO
Tokyo Electron Limited

Our Commitment

1.

TEL will create value and contribute to the realization of sustainable society.

2.

As a leading company in the business of semiconductor production equipment, we will be a frontrunner in initiatives for the protection of the global environment.

3.

Based on our philosophy of respect for people, we will give the issues of health and safety the highest priority.

Our Policy: Stay on the Leading Edge in Semiconductor Technology

Since TEL was founded in 1963, TEL has continually led technological innovation in the semiconductor industry. We will continue developing new technologies and products, in order to contribute to the development of the global semiconductor and flat panel display (FPD) industries. One of the most important factors in opening up new technologies is the effort to reduce the burden on the environment.

We believe that semiconductors and FPDs are a part of the infrastructure of society that enriches the lives of people around the world, lets people live better lives, and enables us to enjoy intelligent living. At the same time, because semiconductors and FPDs are integrated in all electronic devices—from computers and cell phones to refrigerators and many other products—they have the potential to help make a large reduction in the energy consumption of devices and equipment, and in a broader sense, of society overall.

TEL develops and manufactures a vast variety of equipment that is used in semi-

conductor manufacturing. A common feature of this equipment is that large amounts of electricity and chemicals are required in the process of making semiconductors and FPDs. We believe that one mission of TEL is to create equipment that can fabricate semiconductors and FPDs while placing a smaller burden on the environment.

Respect for People is Our Basic Philosophy

Since TEL was founded, we have had "Respect for People" as our basic belief, and our corporate message has been "People. Technology. Commitment." These words represent our commitment to provide customers products of the highest quality and superior technology, and at the same time to give the utmost priority to health and safety and consider the protection of the global environment.



As with environmental protection, TEL is constantly thinking about the health and safety of all its stakeholders—customers, local communities, suppliers, employees—and takes these into account in day-to-day activities.

In addition, we strive to create a workplace environment where people can work toward their goals and make the most of their own ideas. We believe that it is only when people are given respect that a company, or even a society, can develop and grow.

As a Corporate Citizen, We Contribute to Society

We believe that it is by earning the trust of the local community that a company makes its own development sustainable. TEL has operations around the world. We believe that, as a company we should not only consider the local environment, but also contribute to the local community on both environmental and safety fields through a wide range of initiatives that reflect our social responsibility. We are promoting activities based on these beliefs, and we work to raise the awareness of all employees in order to give these attitudes life inside the company.

Meanwhile, we are promoting cooperation not only in the local community. But also in our fields of business, in terms of more fundamental environmental efforts involving the entire industry. At the center of these efforts is the review of semiconductor and FPD production equipment from the perspective of Life Cycle Assessment(LCA). Activities to effectively promote a reduction of the environmental impact of all processes—from development to disposal—are also important. We are playing a leading role in these activities, aware of the huge

benefits for society if each company were to contribute to the reduction of environmental impact in its own specialty field.

In this report we introduce the environmental protection activities mentioned above, and describe TEL's future directions. We will continue to actively share this information,

in an effort to gain the understanding of our many stakeholders.

We warmly welcome your comments and opinions.

Tokyo Electron Group Credo on Environmental Preservation

< The TEL Group Credo on Environmental Preservation >

The Tokyo Electron Group believes that preserving the global environment and constantly improving it is one of the most important objectives for mankind, as well as our business. Based on this credo, we are determined to expand our business by maintaining harmony with the global environment, and thus win the trust of our many customers, shareholders, employees and society in general.

< The TEL Group Principles on Environmental Preservation >

1. Continuous Improvement

TEL is conscious that products manufactured by the TEL Group affect the environment, and based on this awareness, we, with our customers and suppliers, shall continually strive to minimize the impact of processes and operations on the environment.

2. Knowledge

TEL continually strives to enhance its understanding of the impact that the TEL Group has on the environment and the responsibility that this entails. In addition, TEL aims to gain a quantitative grasp of environmental factors, and the impacts resulting from TEL Group activities and operations.

3. Performance Criteria

As well as strictly observing mandatory environmental laws, treaties and agreements, TEL strives to enhance its own environmental management system and improve global environmental preservation programs by the proactive establishment of its own aggressive environmental performance criteria.

4. Disclosure

TEL shares information about its environmental concept, principles and the progress of our contribution toward environmental protection with employees and the general public.

5. Partnership

TEL actively participates in environmental protection activities practiced by our customers, suppliers and communities.

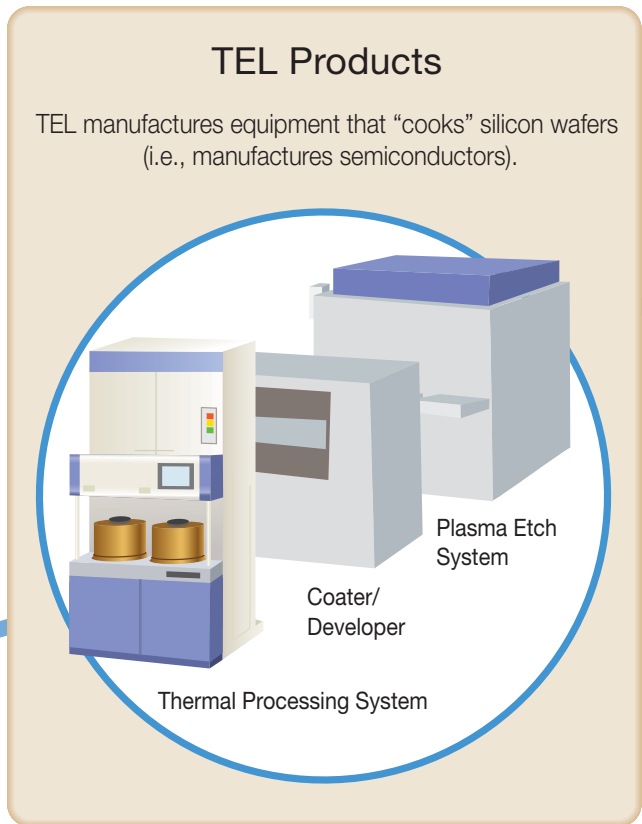
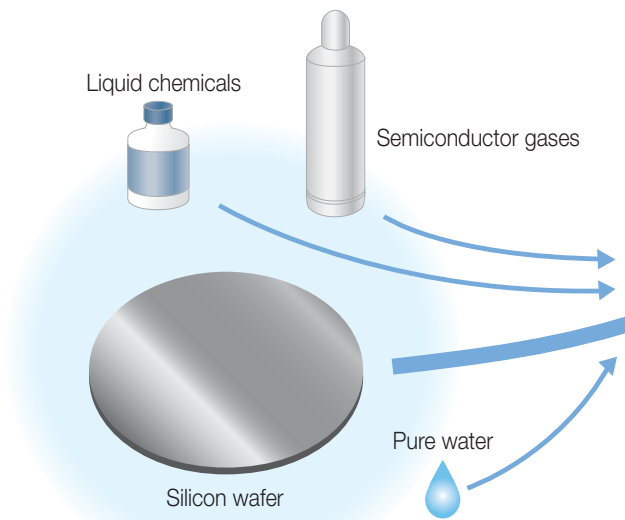
September 25, 1998
Tokyo Electron Limited

Business of Tokyo Electron

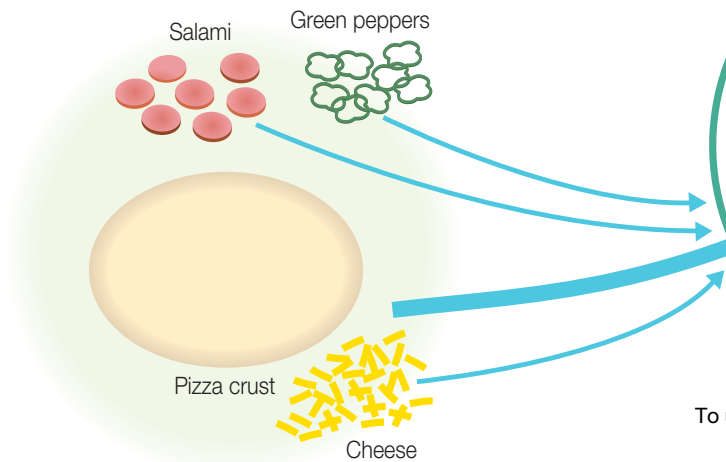
TEL makes equipment that makes semiconductors.

Making Semiconductors...

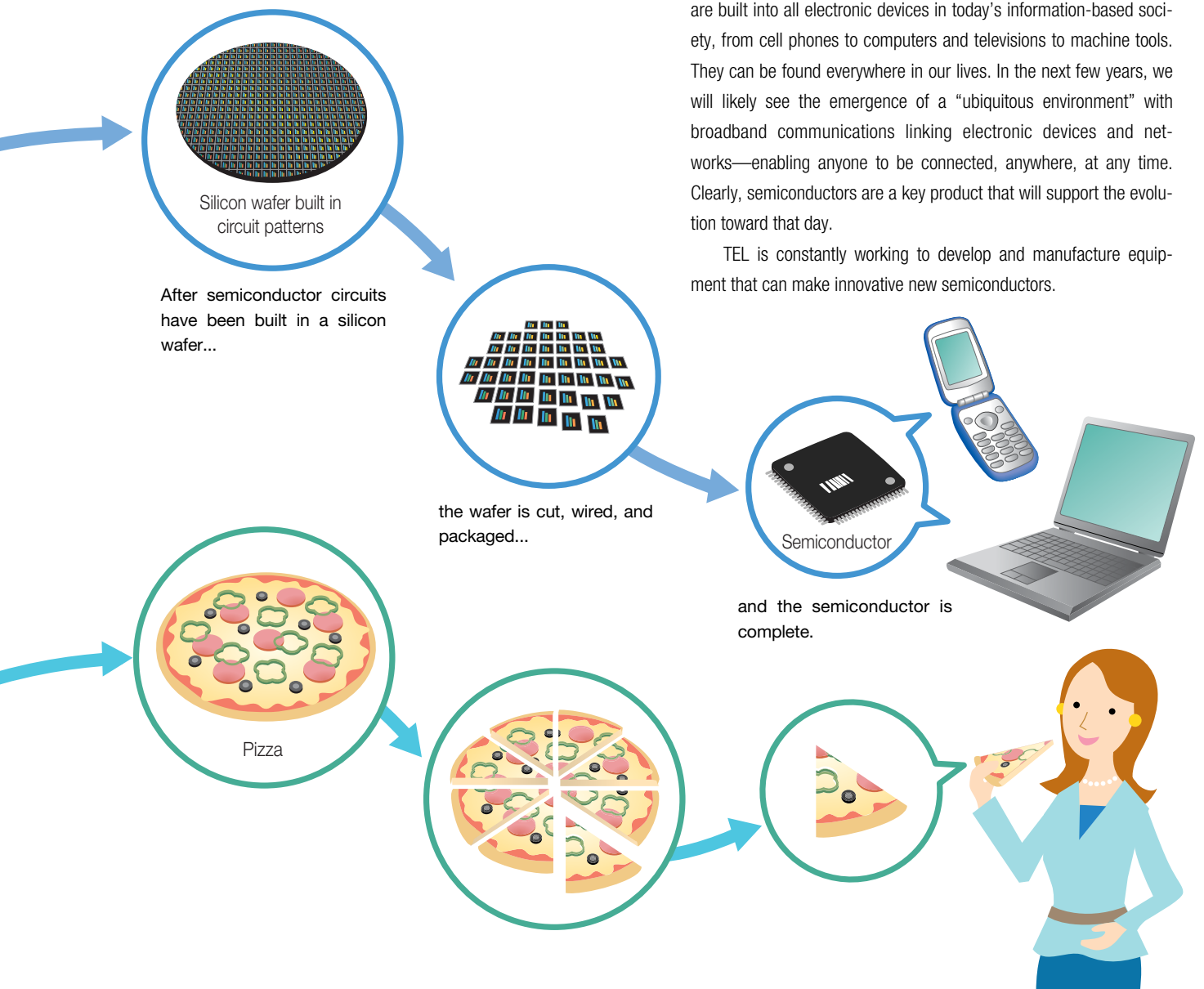
TEL is in the business of developing and manufacturing equipment that conducts a variety of processes to create semiconductors on a thin slice of silicon called a silicon wafer. This page provides a graphic explanation for our readers by comparing the processes to the steps of baking a pizza.



A variety of equipment shown on the right is used to create semiconductor circuits on the thin disk of silicon called a wafer.



To use an analogy, the equipment makes the equivalent in the process as an oven that cooks the pizza.



What Kinds of Products Contain Semiconductors?

Sometimes called the “staple food of industry,” semiconductors are built into all electronic devices in today’s information-based society, from cell phones to computers and televisions to machine tools. They can be found everywhere in our lives. In the next few years, we will likely see the emergence of a “ubiquitous environment” with broadband communications linking electronic devices and networks—enabling anyone to be connected, anywhere, at any time. Clearly, semiconductors are a key product that will support the evolution toward that day.

TEL is constantly working to develop and manufacture equipment that can make innovative new semiconductors.

TEL is also involved in this...

Besides making semiconductor production equipment, TEL is also engaged in the development and manufacture of equipment that produces flat panel displays (FPDs). Electronic components (by Tokyo Electron Device Ltd.) and internet technology equipment (by the Computer Network Business Unit) are also important pillars of the business activities of TEL.

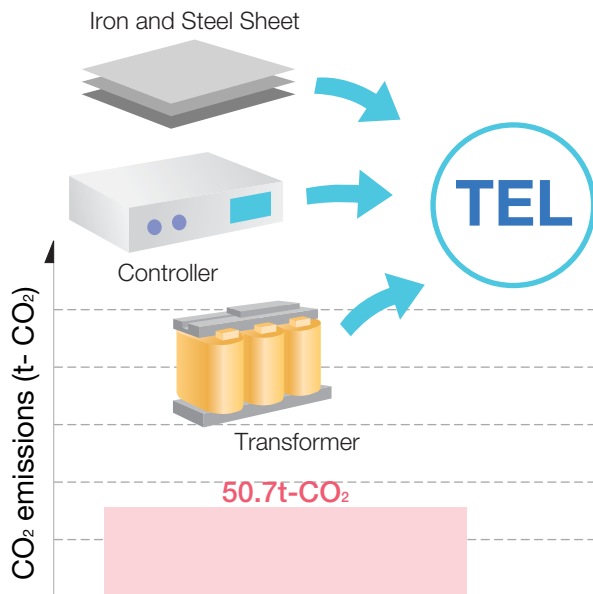
TEL and Environmental Impact

At TEL, we analyze the environmental impact of our products, and use that information in ongoing efforts to reduce the impact.

● Life Cycle Assessment Results for Each TELFORMULA Thermal Processing System

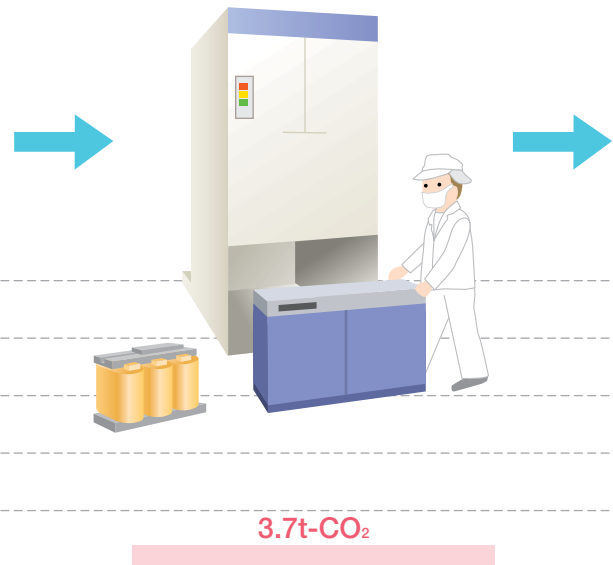
Procurement

Parts number in the tens of thousands. Each complete unit weighs up to one or two tons.



Manufacturing and Assembly

The system is manufactured in a cleanroom* like the one where the equipment will actually be used. Impact are mainly related to energy consumed as electricity for inspection, and gases used in testing processes.



*Cleanroom: A room designed to be completely free of dust and contaminants.

Environmental Impact of Our Products

TEL products are characterized by relatively low environmental impact during manufacturing, compared to the extremely large amounts of resources and energy consumed after being delivered to our customers, who then use the equipment to manufacture semiconductor devices. Because of this, we are working to find ways to reduce the environmental impact incurred during actual use of the equipment. In addition, because a variety of gases and chemicals are employed when the equipment is used, we pay the utmost attention to the issue of safety.

Meanwhile, many of the Earth's resources are used for procuring the raw materials needed for manufacturing, assembly and delivery of equipment. We are making an effort to reduce the environmental burdens throughout the life cycles of these materials as well.

Input and Output of TEL

The material flows of TEL are illustrated in the figure on the right. The figures shown are the combined totals for production and administrative facilities. Here are a few of the most noteworthy features:

- The equipment assessment process is more of an environmental burden than the equipment manufacturing and assembly processes.
- Compared to the above, the amounts of energy used and waste emitted (including liquid waste) during manufacturing and assembly processes are relatively small.

The big part of environmental burden during equipment assessment occurs because electricity and a variety of gases and chemicals are used to assess equipment, using processes similar to those employed during actual semiconductor production.

Delivery

To maintain cleanliness, special packaging materials are used for transporting the equipment. For ground transportation, special vehicles are used that minimize vibration. For shipping overseas, aircrafts or ships are used.



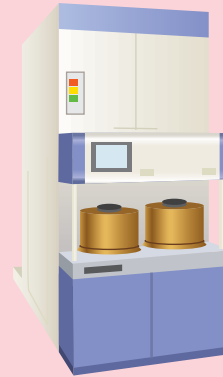
1.5t-CO₂



Use

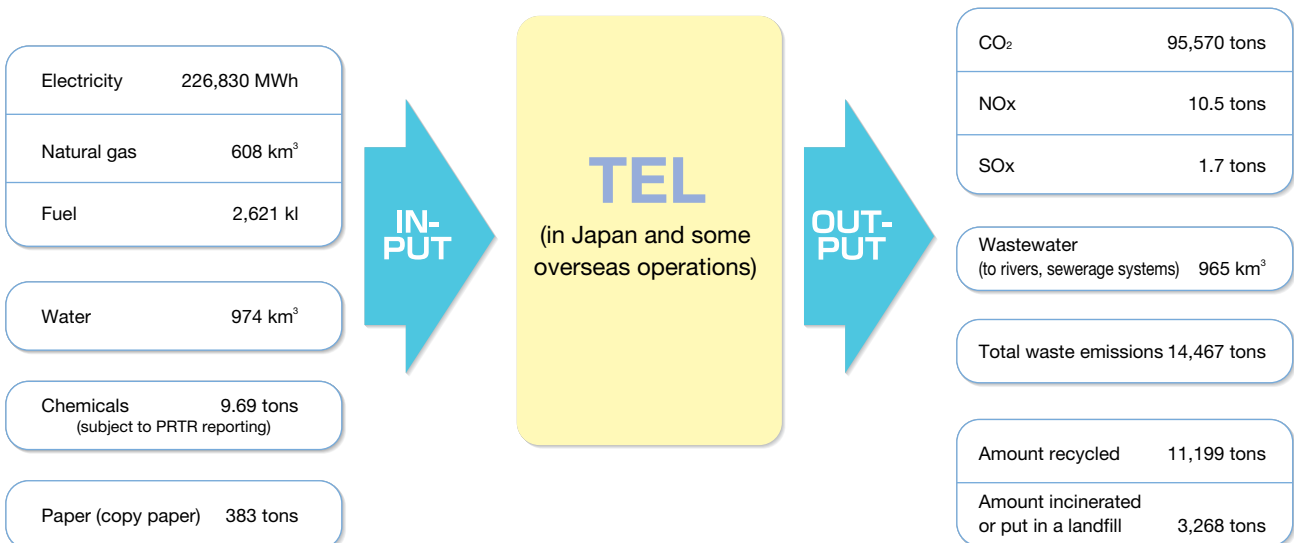
1878.1 t-CO₂ (over ten years)

The semiconductor production equipment is installed in cleanrooms, and most of it is operated 24 hours a day for mass production and to ensure stable operation. A variety of forms of energy and resources—electricity, chemicals, gases, pure water and so on—are used in the semiconductor production process.



The equipment is used for 10 to 20 years.

● Material Flows of TEL



Environmental Targets and Results

We set environmental targets and work to achieve them—based on TEL Credo and Principles on Environmental Preservation.

On September 25, 1998, TEL established the Credo and Principles to define its approach to environmental protection.

TEL promotes its environmental protection activities on the Credo and Principles.

The plans and results for FY 2003 are shown in the table below, along with plans and targets for FY 2004 and beyond.

Environmental Targets and Results

	FY 2003 Plan	Results	Evaluation	Plans and Targets for FY 2004 and Beyond	See
Eco Products	Introduce life cycle assessment (LCA)	Implemented LCA for all products	○	Apply LCA to all new products	P12
	Promote the introduction of lead-free solder	Eco Design Working Group studied lead-free solder and set target dates for introduction	○	Start task teams with representatives of each business unit, and go fully lead-free by the end of 2005	P13
	Promote green procurement	Helped low-ranking suppliers (based on the results of assessments) make improvements	○	Re-assess suppliers, review business relationships	P14
Eco Factories	Study potential to achieve zero emissions. Set targets	Defined the concept of zero emissions in the context of TEL businesses. Set targets and deadlines	○	Achieve zero emissions at all production facilities FY 2006. Increase whole TEL recycling rate to over 90%	P16
	Reduce energy consumption (by 1% CO ₂ emissions per unit of sales, based on the Law Concerning the Rational Use of Energy)	As a result of energy conservation efforts at each location, reduced energy conservation by 8% per unit of sales	○	Promote further energy conservation. Achieve 1997 standard levels of energy use per unit of sales	P17
	Determine amounts of chemicals used that are subject to PRTR reporting	Succeeded in determining amounts	○	Continue monitoring amounts of existing and new chemicals. Reduce amounts used	P19
	Expand EHS activities in overseas factories	Determined conditions overseas	△	Take next steps based on information obtained	—
EHS Management System	Develop global EHS organizational structure	Created Global EHS Committee. Established four working groups and reviewed entire organization	○	Expand activities in each organization. Communicate smoothly with overseas operations	P21
	Implement TEL Eco-Activity (basic environmental management system) at office facilities	Launched activities at each location	○	Promote activities further. Work toward ISO14001 certification at Tokyo Electron Device	P22
	Introduce occupational health and safety management systems at production facilities	Introduced at many locations. Implemented risk assessments and risk reduction plans	○	Promote introduction at facilities not yet covered. Promote risk assessments and risk reduction plans	P22
	Develop EHS assessment system	Trained assessors and conducted EHS assessments at two facilities	○	Promote assessments at facilities in Japan, and consider applying at production facilities overseas as well	P23
	Promotion of activities at overseas offices	Started to assess activities in each region and started to prepare educational materials	△	Implemented environmental education, considered introduction of environmental management system, including TEL Eco-Activity, etc	—

○ Achieved target △ Achieved 80% of target × Achieved less than 80% of target

Promoting Environmentally-friendly Product Design—Industry-Wide

TEL is following two tracks to reduce the burden on the environment. One focus on the impact that occurs when our customers use our products and the other on the impact from our own production processes.

In design and development, we make an effort to consider whether it is possible to use gases with low greenhouse gas coefficients and reduce the amounts of pure water and electricity consumed when customers use TEL semiconductor production equipment. We do not stop there, of course. We also work through other initiatives such as holding seminars to raise the overall industry's awareness about environmental impact.

Meanwhile, in terms of production activities of TEL, we are aggressively promoting efforts to raise our recycling rates at factories nationwide in Japan. We are implementing efforts to achieve "zero emissions" this fiscal year in the Kyushu region, in the Tohoku region in FY 2005, and in the Yamanashi region by FY 2006. We also believe that by shortening manufacturing lead times for semiconductor production equipment and eliminating waste on the assembly line, we can not only reduce production costs, but also considerably reduce environmental impact. TEL has traditionally had a culture that emphasizes safety in production activities, but at the same time, we are actively working to consider the environment.



Masaki Kaneko
Director, Environment,
Health & Safety Center,
Tokyo Electron Limited

Environmental Activities of TEL Group Companies

Here we introduce the business activities of two TEL Group companies as well as their environmental targets and achievements.



Toshiaki Sunagawa
President and Representative Director

Tokyo Electron Device Limited

A New Operational Structure with ISO14001 Certification and the Best Aspects of EMS

The main business of Tokyo Electron Device Ltd. is stocking and selling semiconductor products, software, electronic components. Because of that, we do not impose a large direct burden on the environment in the way that factories do, but in recent years, we have received many requests to reduce the environmental burdens of the products we handle, and as a result we are strengthening our efforts in this area.

This is because more and more products are aimed particularly at the “digital consumer,” and the environmental awareness of our customers has increased. Thus, for products such as the semiconductors that our company handles, more attention is being given to the energy efficiency of products, whether or not they contain hazardous substances, and whether or not they are environmentally friendly.

We have taken these external factors to heart, and during the past year there has been a change in environmental awareness inside the company. Consideration of the environment is of course a part of office work, but we are starting initiatives to increase the environmental quality of products that we handle. In line with this, we are developing an environmental management system and planning to obtain ISO14001 certification for it by October 2004.

Our position differs somewhat from a component maker, but we are actively working to consider the environment in a variety of ways within the scope that is possible as a trading company.



Takashi Nakamura
President and Representative Director

Tokyo Electron Logistics Limited

New Initiatives to Reduce the Environmental Impact of Facilities Management and Logistics

Tokyo Electron Logistics Ltd. handles not only the logistics for TEL in Japan and overseas, but also a wide range of tasks, such as equipment installation and facilities management.

As a part of TEL’s initiatives on decreasing environmental burden, in the facilities management arena we installed equipment to handle concentrated hydrofluoric acid liquid waste in-house, eliminating the need to send it out for disposal as industrial waste. As examples of other initiatives to reduce electrical and water consumption at the factory, we are replacing heat pump air conditioning systems that consumed a large amount of electricity with more efficient “free cooling” systems that utilize outdoor temperatures.

In terms of logistics functions, we reduce the amount of cushioning materials needed in product packing. Because we handle a variety of products, the boxes and containers we use are large, and it is easier to control items that are of the same size. However, if we use many sizes, the handling costs rise, but if we use packing boxes of the right sizes to match the product dimensions, the amount of cushioning material needed would be reduced. We must find the correct mix between cost and environmentally conscious activities.

In addition, by using consolidated shipping and delivery, color coding and so on, we are boosting work efficiency and reducing the burden on the environment. We are also giving some thought to the future of packing for shipping overseas and testing a new logistics concept. This involves avoiding the use of wooden crates for shipping overseas, and loading the equipment on a truck and the truck on a ferry so the equipment can be delivered without reloading. We will be putting more effort into this new type of approach in the future.

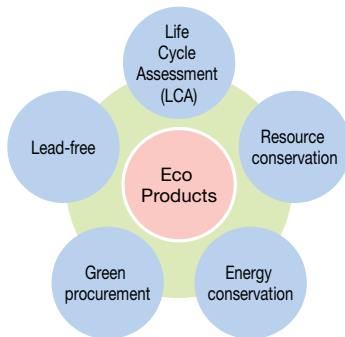
Reducing the Environmental Impact of Products (Part 1)

We are introducing Life Cycle Assessment for all new products we develop, and designing products to minimize environmental impact.

TEL Stance on Eco Products

TEL has worked to incorporate suggestions from customers in its products, and has promoted reduction of environmental burden during semiconductor production and elimination of hazardous substances from the materials used to make equipment. We respect the customer's needs to know about environmental impact of products throughout the life cycle, and work as quickly as possible to collect data relating to these impacts—from the manufacturing stage through to disposal. As a result, TEL has become an industry leader in terms of accumulating product LCA data for use when designing products.

Eco Product Concept



Organization in TEL

TEL is defining its actions and priorities in terms of reducing the environmental burden of its equipment, and is working to improve environmental performance.

Regarding Eco Products, the Eco Design Working Group has been established under the Product EHS Technical Committee (see page 21) and is now functioning. This working group started from creating an "EHS road map" for equipment, and is working to apply it to achieve energy and resource conservation. In addition, in each business unit, we are gathering LCA data on new equipment being developed and learning about the environmental impact, and are reflecting those findings in equipment improvements and next-generation models.

Due to the need to consider the environmental impact of the raw materials we procure for equipment production, we established a Green Procurement Working Group, which has clarified TEL procurement standards. This working group is investigating the environmental efforts of suppliers and contractors, and where necessary, supporting them by offering environmental education. We have also established a Lead-Free Task Team and aim to implement lead-free policies starting with products produced in 2006.

Major Efforts in Each Business Unit—A Sampling of Targets and Results

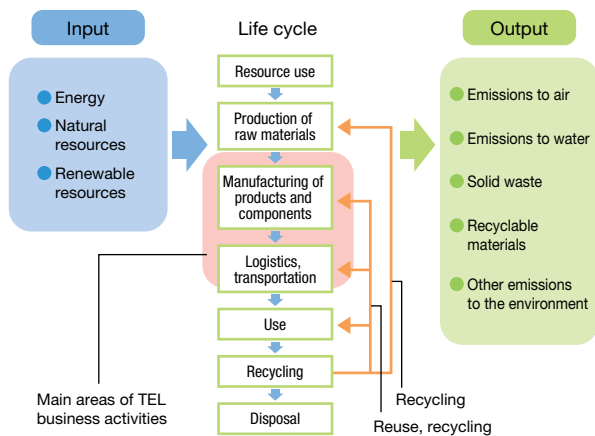
Business Unit	FY 2003 Target	Results	Targets for FY 2004 and beyond
Etch Systems	Reduce power consumption	Reduced power consumption of chillers by 40%	Reduce equipment power consumption by 3%
Test Systems	Reduce power consumption	300 mm equipment: 10% below 1999 levels	300 mm equipment: 50% below 1999 levels
Single Wafer Deposition	Reduce power consumption	300 mm equipment: 40% below 1999 levels	300 mm equipment: 50% below 1999 levels
FPD Systems	Reduce chemicals used	Developed equipment to reduce liquid chemical consumption	Continue efforts
Cleaning Systems	Reduce amount of liquid chemicals used	UW equipment: 64.4% reduction	Continue efforts
	Reduce amount of pure water used	UW equipment: 28.2% reduction	Continue efforts
Clean Track	Reduce use of liquid chemicals (resist)	300 mm equipment: 35% below 1999 levels	Consider ways to reduce amounts of other liquid chemicals used
	Reduce power consumption	300 mm equipment: 5% below 1999 levels	300 mm equipment: 20% below 1999 levels
	Conduct product assessments (preliminary)	After trials, start full operation	Continue operation, reduce environmental impact
Thermal Processing Systems	Reduce equipment footprint	300 mm equipment: compared to existing α -301 model, reduced by about 10% in α -303i	Implement when developing new models

Life Cycle Assessment (LCA)

TEL has launched efforts to conduct LCA as a way to objectively evaluate the environmental impact of equipment, using common criteria that we can share with our customers.

To begin with, we started by establishing common methodologies for whole TEL and getting a general grasp of the environmental impact of equipment, and then implementing an LCA for the major models in each business unit. We compared new and old models using LCA methods and confirmed that the overall environmental impact lower in new models. Now we are applying complete LCAs on all newly-developed equipment, and making continuous improvements of environmental performance by feeding the findings of assessments back into new product development.

Product Life Cycle Assessment



LCA Case Study (Thermal Processing System)

As the silicon wafer size used in semiconductor production continues to grow, the production equipment itself also grows larger. Also, as the market demands semiconductors with increasingly higher performance, the processes for production are also becoming more complex, and various additional features are also demanded of the production equipment. In this context, if equipment is not designed with the environment in mind, there will be a general tendency for increasingly severe environmental impact. LCAs implemented to date have shown us that more than 90% of the environmental burden during the entire life cycle of our equipment occurs during operation of the equipment.

Below we introduce an example of LCA implementation by comparing the new model TELFORMULA (Thermal Processing System)

with an existing model, the α -303i.

As shown in the graph, we learned that for the existing model, the consumable supplies accounted for the vast majority of the environmental burden incurred during operation of the equipment. Of this, the consumption associated with the quartz chamber and non-production wafers, known as “dummy wafers,” was considerable. In comparison, the TELFORMULA has a completely revised quartz chamber structure and cleaning methodology introduced in-situ dry cleaning that uses the latest technology to replace wet cleaning. As a result, we were not only able to reduce the quantity of dummy wafers, but this also effected a large improvement in the life of the quartz chamber. At the same time we improved equipment specs like the utilization rate and process performance, we were able to significantly reduce the environmental impact.

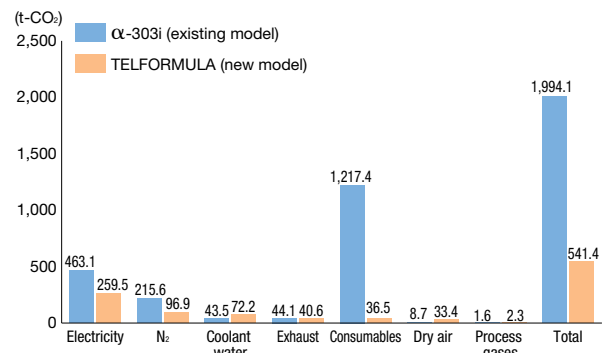


α -303i (existing model)



TELFORMULA (new model)

Comparison of Energy Consumption (CO₂ Equivalent) during Operation Using Same RUN* Coefficient



*RUN: Refers to the series of steps in one cycle of process implementation of equipment, including heating, wafer input, processing, and wafer removal.

Reducing the Environmental Impact of Products (Part 2)

We are designing semiconductor production equipment to conserve resources and reduce hazardous substances, and have ongoing efforts to minimize the environmental burden that arises during use.

Approach Lead-Free

Lead can cause nervous system disorders if it accumulates in the body. Under the normal conditions of equipment use, there is no concern about injury arising from lead. However, the potential exists for impact on human health through the pollution of ecosystems if acid rain falls on disposed equipment and waste and then seeps into the environment. The European Union's WEEE Directive*1 and RoHS Directive*2 ban the use of hazardous substances such as mercury, cadmium and lead in electrical equipment, starting in June 2006. Although semiconductor production equipment does not fall under

these directives, in order to be proactive in preventing pollution, TEL is promoting its own voluntary and systematic efforts to go lead-free.

TEL has begun to consider the introduction of lead-free solder for products manufactured by TEL Group companies. We are also investigating the status of solder use by our suppliers and urging them to cooperate in this initiative.

*1WEEE : Waste Electrical and Electronic Equipment

*2RoHS : Restriction of the use of Hazardous Substance in electrical and electronic equipment

Lead-Free Implementation Plan

Action Plan	FY 2004				FY 2005				FY 2006			
	Apr.	July	Oct.	Jan.	Apr.	July	Oct.	Jan.	Apr.	July	Oct.	Jan.
Establish Lead-Free Task Team, start work	→											
In-house awareness-raising	→											
Supplier survey, technical cooperation, action plan	→											
Consider technologies and materials used	→											
Evaluate, summarize the potential for lead-free			→									
Prepare for mass production			→									
Trial production and evaluation of boards and assemblies (practical training about soldering)			→									
Mass production											Starting January 2006 →	

TOPICS

Developing Coating Methods for reducing Photoresist

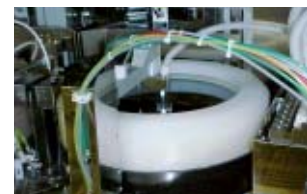
The developing process during semiconductor production uses an organic photosensitive chemical, known as photoresist, for coating the wafer surface. This photoresist accounts for a relatively large portion of the equipment running costs. For that reason, and also from the perspective of saving resources, it would be valuable to reduce the amounts used.

TEL has developed a prewet coating method that reduces the amount of photoresist used to less than one-fourth of what is conventionally used, by applying a solvent immediately before applying the photoresist, improving the bond with the wafer. This method is being used in the major coater/developer line, the CLEAN TRACK ACT series. Today, our customers around the world are using this process.

The rising performance of semiconductors requires larger dies. In order to economically produce equal number of dies per wafer, wafer sizes increases. Because of this, TEL will continue with its efforts to find ways to reduce the amount of photoresist used and save resources in other ways.

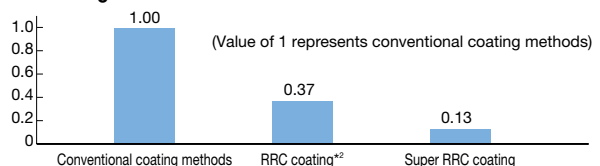


Coater/Developer (CLEAN TRACK ACT 12)



Prewet Coating Method

Reducing the Use of CAR Photoresist*1



*1Chemically amplified photoresist for fine processing that has been popular in recent years.

*2Acronym for "Reduce Resist Consumption."

Green Procurement

We work with our suppliers to encourage the use of materials with low environmental impact, and to minimize the resources used and the waste emitted during product distribution.

Stance on Green Procurement

The semiconductor and FPD production equipment at the core of TEL business is made from raw materials and components procured from other companies.

If we are to reduce environmental impact across all business activities of TEL, the components and raw materials must be made in ways that take the environment into account. In this respect, we are making an effort to conduct purchasing based on our Green Procurement Guideline*, buying from those suppliers who are actively making an effort to reduce environmental impact.

In the future, we intend to start procuring materials only from suppliers who meet certain environmental standards.



*Green Procurement Guideline: Standards and targets for chemicals and energy conservation, packaging, resource conservation, recycling, and information disclosure.

Green Procurement Guideline

Efforts in FY 2003

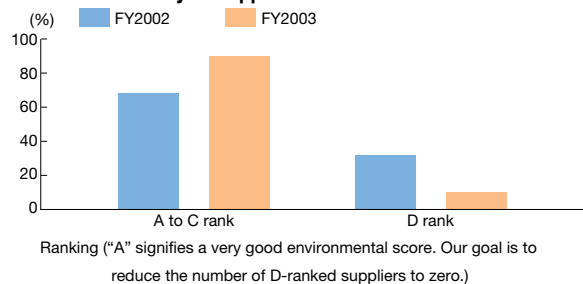
In FY 2002, we distributed a questionnaire to suppliers and received responses about their environmental activities.

We used four categories to rank our suppliers on environmental consideration and prepared two programs to help those whose efforts were inadequate. One program involves environmental education from TEL, and the other requires suppliers to maintain dialogue with us while making environmental improvements, based on written improvement plans that they themselves prepare. As a result of implementing these programs, the number of environmentally advanced suppliers (A to C rank) has increased while the percentage of suppliers with inadequate environmental consideration (D rank) has dropped to one-third the level of the previous year, as shown in the graph.

In addition, TEL spontaneously identified those chemical substances—over and above those already regulated by the government—that have serious environmental impact. We have been working to find substitutes and to reduce the amounts of these chemicals used. We have also started asking suppliers to cooperate in these efforts.

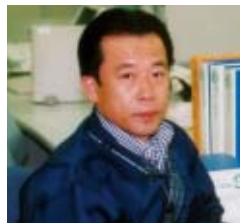
We will continue to work with our suppliers to reduce environmental impact.

Results of Survey of Suppliers' Environmental Activities



TOPICS

Message from a Procurement Manager



Satoru Inoue

Quality Assurance Department,
Koshi Plant, Tokyo Electron Kyushu Limited

Kumamoto, on Japan's island of Kyushu, has some of the best groundwater of all cities in the world. Improving the level of environmental management of the companies we deal with translates into helping to protect the local environment, and the people who depend on the region for all of their needs in life.

With this in mind, I will continue to make consideration of the impact on the local environment a priority in purchasing.

These containers help us use fewer packing materials.

In the past, we packaged each plastic box that we shipped, but today we pack the whole container and deliver it right to the customer's cleanroom. Since it stands tall and has wheels attached, the container does not waste space, and it has the merit of allowing us to ship many products at the same time.

With this new shipping method, we have been able to reduce the amount of packing materials used, and also to reduce the amount of work involved in packing and unpacking. In addition, because the walls of the container are made of clear acrylic, handlers can verify the contents, and this serves to prevent product damage and losses.



Containers used for shipping

Waste Reduction and Recycling

TEL is working to achieve zero emissions from its plants, as a part of efforts to reduce environmental impact.

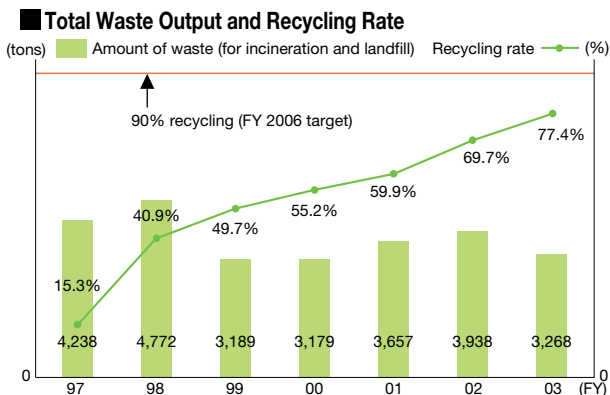
Stance on Waste Reduction and Recycling

“Produce no waste. Recycle any waste that is produced. Properly dispose of any waste that cannot be recycled.”—based on these principles, TEL is working to minimize the waste generated by our business. With a worsening shortage of final disposal sites in Japan and landfill costs on the rise, efforts to reduce waste not only help to minimize environmental impact, but also lead to lower production costs. We have a target of achieving zero waste emissions from all TEL manufacturing plants in FY 2006. We are conducting a variety of efforts to reduce the environmental impact, including sorting and recovering waste, identifying recycling businesses that we can work with, approving and monitoring waste management contractors, checking regularly on the status of final disposal sites, and shifting to processes that do not generate waste.

Total Waste Output

The graph below shows the recycling rate of the entire TEL and the amount of waste that went to final disposal. It reveals the results of our efforts to raise the recycling rate year-by-year and to use resources effectively. By the in-house handling of liquid waste, which we generate in large quantities, we have also been able to reduce the environmental burden associated with the transportation of waste.

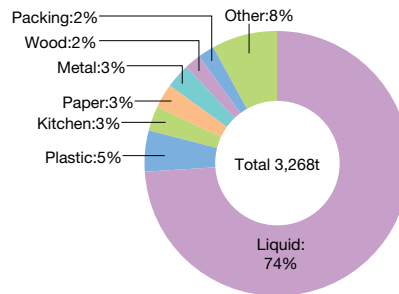
Since FY 2000, the total volume of waste has been calculated as the total of waste from both office facilities and manufacturing plants. Although the amount of waste generated varies with production levels and the status of factory operations, we are committed to continue working to reduce waste further.



Breakdown

Liquid waste accounts for about 70% of the total waste from TEL, because the various chemicals used during product development and evaluation end up as waste. Non-liquid waste in FY 2003 amounted to about 850 tons, which could be considered a small amount of waste for a business of this size.

Waste Breakdown in FY 2003

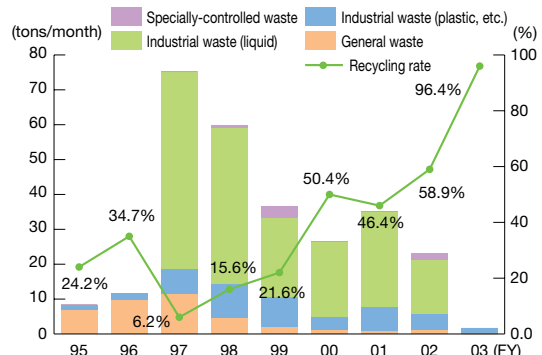


TOPICS

Tohoku Plant's Efforts to Reduce Waste

Each TEL site has established and equipped a special subcommittee for waste reduction and is actively working on various measures. The graph below summarizes the waste volume and recycling rates of the Tohoku plant. In FY 1997 a process evaluation facility began operations, and the amount of waste liquids increased from the cleaning of wafers and quartz. Because of that, the plant started operating a process to handle waste liquid in FY 1999, and the amount of waste liquid declined. Later, as a result of more thorough efforts to separate waste and to find businesses that recycle and handle liquid waste, the plant was able to raise the recycling rate to 96.4% in FY 2003, and reduce the amount of waste by more than 95% from the peak monthly average of 1.58 tons in FY 1997. An issue to be addressed in the future is the processing of plastics and other materials not yet being recycled.

Tohoku Plant: Waste Output and Recycling Rate



Recycling

To recycle efficiently it is important to separate waste carefully when it is initially discarded. Our facilities separate waste into between 24 and 29 categories, depending on its characteristics. The major categories are paper, drink containers, scrap wood, glass, plastics, and metals. Through sustained efforts, the recycling rate of TEL overall has risen year by year, and in FY 2003 reached 77.4%. Our target for FY 2006 is to surpass 90%. Tokyo Electron America has been able to recycle about 30 tons of waste in a year, because of aggressive efforts to recycle materials such as paper, plastic, glass, and batteries that arise from business activities.

Zero Emissions by 2006

In TEL, we call plants that have reduced waste emissions, promoted recycling, and achieved certain targets “zero emissions factories.” We have defined “zero emissions” to mean that waste emissions have been reduced to the greatest extent possible—specifically, to the extent that disposal by simple incineration and landfill amounts to less than 2% of total waste. We have set a goal of having all production sites in Japan achieve zero emissions by the end of FY 2006, and are working to realize that goal.

TOPICS

Installation of Liquid Waste Treatment Equipment in the Yamanashi Region

The smartest approach is to start first with the type of waste that we emit in the largest quantities. But depending on the type of waste, this may require some investment in new facilities.

Before FY 2003, most of the waste from Yamanashi region (Fuji and Hosaka plants) consisted of liquid waste from wafer and quartz cleaning. These have been treating low-concentration acids in-house, but because the existing facilities could not treat concentrated hydrofluoric acid, this treatment was subcontracted to an outside business. After careful calculation of investment and subcontracting costs the plant installed equipment to treat hydrofluoric acid, and in-house treatment began in May 2003.

According to our plans, the Yamanashi region will be able to reduce its amount of waste by over 60%. The investment is expected to pay for itself in about two years, and it will also be possible to significantly reduce the environmental impact associated with the transporting of the waste that was previously being transferred off-site.



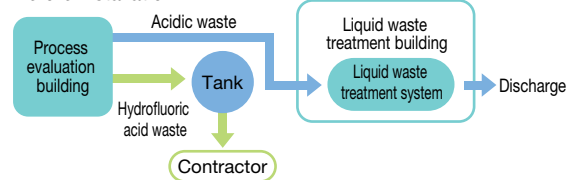
Newly installed hydrofluoric acid treatment system



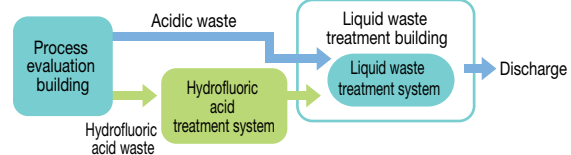
Exterior view of the liquid waste treatment building

Improving Liquid Waste Treatment Capacity in the Yamanashi Region

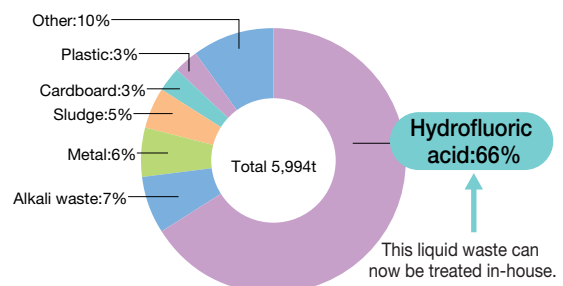
Before installation



After installation



Breakdown of Yamanashi Region Waste in FY 2003



Energy Conservation

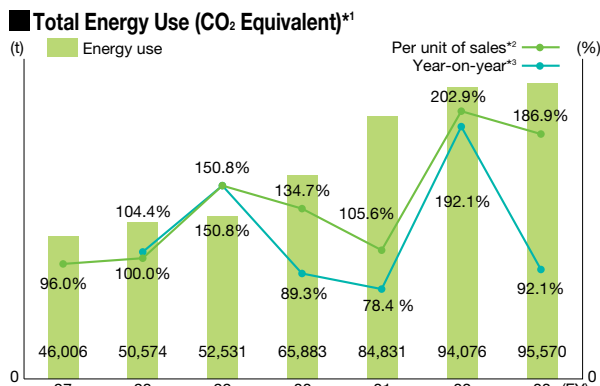
TEL promotes energy conservation at all sites as a way to help prevent global warming. We set energy reduction targets for each site and work systematically to reach them.

Stance on Energy Conservation

Most manufacturing plants in Japan are Type 1 Designated Energy Management Factories under Japan's Law Concerning the Rational Use of Energy. As the law dictates, these factories have established and observed control standards based on certain criteria, appointed an energy manager, and set up institutional controls on energy consumption. Each of our facilities is now implementing energy conservation activities, having set power-saving targets for lighting and office equipment, and controlling air conditioning temperatures. In addition, facilities that are involved in product development and manufacturing are now doing systematic shutdowns during longer holidays and working to increase the efficiency of each type of work procedure.

Energy Usage

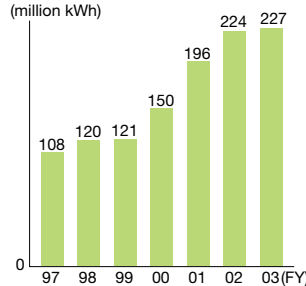
Due to the ongoing economic slowdown, during FY 2003, production and sales volumes increased only slightly compared to the previous year. Because of that, the CO₂ emissions associated with energy consumption increased only slightly. The sudden increase in the amount of natural gas usage was due to the use of new chiller equipment at the Kansai Technology Center. With energy consumption per unit of sales down to 92% from the previous year, we surpass the target of 1% reduction, but this measure exceeds the FY 1998 base year by a wide 87%. We will continue to work for energy conservation in the future.



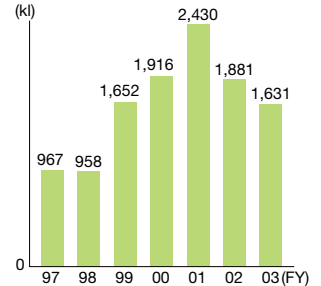
*1 For CO₂ equivalent, see the Ministry of the Environment's "Environmental Activity Evaluation Program."
 *2 Energy consumption divided by sales (FY 1998=100%).
 *3 Current year divided by previous fiscal year.

(All sites in Japan and a portion of sites overseas)

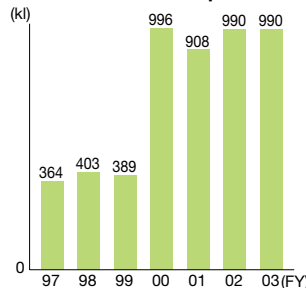
Electrical Consumption



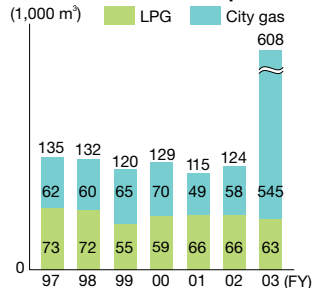
Heavy Fuel Oil Consumption



Kerosene Consumption



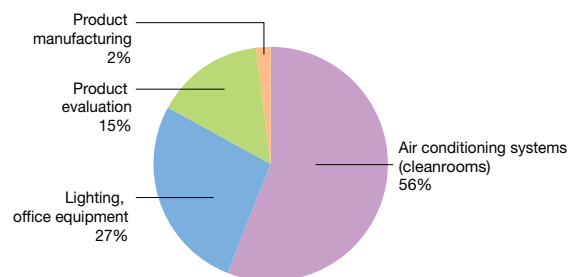
Natural Gas Consumption



(All sites in Japan and a portion of sites overseas)

TOPICS

Share of Power Use at Manufacturing Plants



Calculations and actual measurements reveal the power usage at the Tohoku plant to be as shown in the graph. The greatest amount of power is needed for air conditioning of cleanrooms, etc, followed by lighting and office equipment, and product testing/evaluation. Surprisingly, only 2% of total power consumption is used in the actual manufacture of products.

Resource Conservation

We are reducing paper consumption as part of our strategy to conserve resources. TEL is also taking other measures for effective use of resources, such as water conservation, avoiding vehicle engine idling, and purchasing recycled products.

Stance on Resource Conservation

To continue our efforts in reducing the amount of resources we use, we are also conducting green purchasing. To promote resource conservation, we work to reduce the amount of water, copy paper and stationery that we use or purchase, are proactive in our purchasing of green products, and work with office suppliers to have them collect the items we no longer need.

TEL is also making a concerted effort to introduce low-emissions vehicles. For example, by converting to low-emissions vehicles and low fuel-consumption vehicles, 80% of the company fleet at Tokyo Electron Device headquarters now consists of vehicles that have environmental impact.

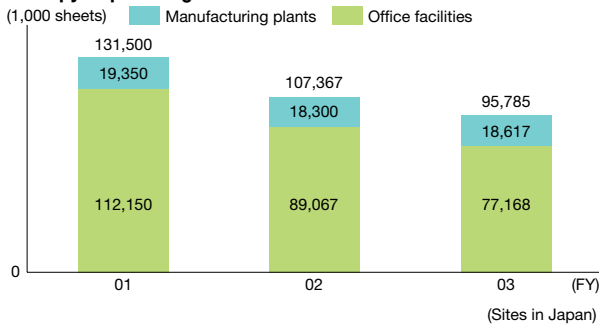
Efforts to Reduce Paper Usage

All companies in TEL are working to reduce of paper consumption. For example, all employees are encouraged to use both sides of paper and to reduce the paper size when making copies. In addition, efforts are being made to share information without using paper, for example, by using electronic means for intra-office memos and notices. As a result of these and other efforts, the entire TEL used about 12 million fewer sheets of copy paper in FY 2003 than in the previous year, a reduction of about 11%.

We will continue to use recycled paper in every sites (with the exception of a few special applications), and to review office procedures thereby to minimize the use of paper records and forms.

We are also trying to help protect forests by using paper cups made of kenaf in place of conventional paper made from wood fiber, and are encouraging employees to limit the use of paper cups.

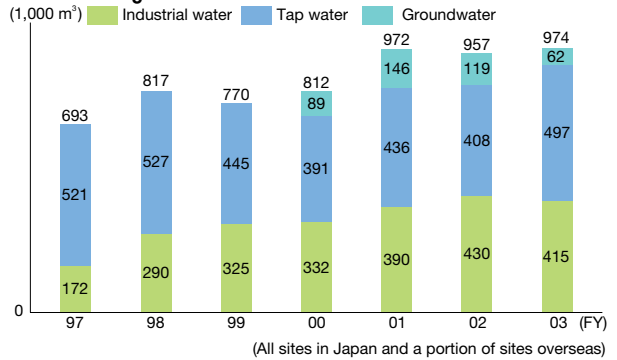
Copy Paper Usage



Efforts to Reduce Water Usage

Our manufacturing plants are installing cooling water circulation systems, and recycling industrial water and reducing water usage in all stages of operations—in production, development, testing, shipping, and so on. We are installing automatic plumbing company-wide in lavatories, as a way to avoid the excessive use of water.

Water Usage



TOPICS

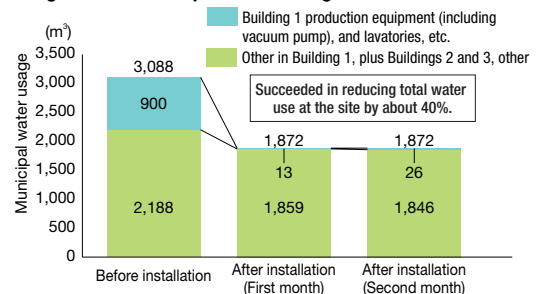
Installation of Water-Saving Systems (Air-Cooled Vacuum Pump)

To reduce water usage, the Saga plant has converted from a water-cooled vacuum pump used in manufacturing to an air-cooled type. This is because calculations and a study by the Resource Conservation Committee showed that the conventional pump was consuming a large amount of municipal water. By converting, the plant was able to reduce water usage by about 18,000m³ per year, which was also quite good in terms of cost-benefit analysis.



Newly-installed Air-cooled Vacuum Pump

Saga Plant: Municipal Water Usage



Chemical Management

To prevent environmental pollution, we strictly control the chemical substances we use. We independently identify chemicals that we ban from use in our products and work to eliminate them and find alternatives, and also work to determine which substances are present in the products we purchase from suppliers.

Stance on Chemical Management

Chemical substances such as plastics, coatings, lubricants, gases and chemicals are an essential part of TEL production activities. They have many valuable properties, but the other side of the coin is that some of them also have hazardous properties. If they are not properly managed, the potential exists for accidents or pollution of the environment.

TEL starts by eliminating the use of hazardous substances to the greatest extent possible. We independently determine the chemicals to be banned from green purchasing and product design, and then work to find safe substitutes and to reduce the amounts used. In addition, we conduct voluntary controls of hazardous substances that are stricter than government regulations, in an effort to minimize chemical risk.

Complying with the PRTR* Law

Japan's PRTR Law was promulgated in March 2000, and we began full-scale PRTR reporting during FY 2003, after a preparatory phase involving the creation of guidelines for the management of chemical substances, the provision of MSDS information, and the development of methodologies for calculating the amounts of releases and for making official reports to the government.

Under the PRTR Law, reporting is mandatory for chemicals that are handled in amounts of five tons or more per year at each facility. TEL has been conducting stricter controls than those legally required, by continuing to control and monitor any substances stipulated by the law that we use in amounts of 0.1 tons or more per year. The FY 2003 totals for substances targeted by the PRTR Law are shown in the table below. We handled no substances in amounts exceeding five tons (in either of the first two years) that would require reporting.

*PRTR (Pollutant Release and Transfer Registers): A framework for controlling chemical substances that may be hazardous to ecosystems and human health. It involves determining, compiling, and reporting on the amounts of chemicals used, released into the environment, and contained in waste transferred off-site.

Class 1 Substances Controlled under the PRTR Law (Units: tons)

Official number	Chemical name	Amount handled
1	Water soluble zinc compounds	0.05
16	2-amino ethanol	0.43
43	Ethylene glycol	4.00
172	N,N-dimethylformamide	0.45
207	Water soluble copper salts (except complex salts)	0.12
260	Pyrocatechol	0.03
283	Hydrogen fluoride and its water-soluble salts	3.69
311	Manganese and its compounds	0.90
Total		9.69

Concrite of the Chemicals Contained in Products

TEL works to address international and domestic laws, regulations and trends relating to the management of chemical substances and is striving to eliminate the general use of hazardous substances.

We have investigated the chemical substances contained in the components and materials that make up our products, and based on our findings, have listed the substances for which we have prohibited in our products. These findings are also reflected in our green procurement. Carrying out these activities rigorously will enable us to offer products that do not use substances that could damage or harm human health or the environment.

Prohibited Substances in Construction Materials of TEL Products

Substance group name	
Asbestos	Hydrogen fluoride and its water-soluble salts
Cadmium and its compounds	Beryllium and its compounds
Hexavalent chromium compounds	PCBs (polychlorinated biphenyls)
Cyanide compounds	Ozone-depleting substances
Mercury and its compounds	Halogenated fire retardants
Organic tin compounds	Specified brominated fire retardants (PBB, PBDE, etc.)
Selenium and its compounds	Polychlorinated naphthalene (chlorine number 3 and higher)
Dioxins	Organochlorine compounds
Arsenic and its compounds	PFOS* and its homologues

*Perfluorooctane sulfonate: An intermediate substance from which target chemicals are synthesized.

TOPICS

Management of Liquid Chemicals by Labeling

In the evaluation cleanrooms at the Kumamoto and Koshi plants, we are managing the use of liquid chemicals by affixing labels with identification data onto the containers of chemicals used in product evaluation and testing.

The information on labels is entered into a database, enabling us to easily track inventories and status of use.

In accordance with handling methods specified by MSDS standards, the chemicals are stored separately at either cool or room temperatures as appropriate.



Label attached to chemical container

Efforts to Reduce Non-CO₂ Greenhouse Gas Emissions

The Kyoto Protocol was adopted at the Third Session of the Conference of the Parties to the UN Framework Convention on Climate Change (COP3), held in Kyoto in December 1997. It set specific numerical targets for the reduction of greenhouse gas emissions from developed countries, and methods for achieving these. Japan ratified the Protocol in June 2002. TEL is working hard to reduce greenhouse gas emissions. Besides carbon dioxide emissions from energy use, TEL is using PFCs and SF₆ (greenhouse gases) in cleaning and dry etching processes, among others. The total of these emissions is 10,000 tons per year (CO₂ equivalent). TEL will continue working to control and reduce the emissions per unit of business activity as well as to reduce total emissions.

Greenhouse Gas Emissions from Sites in Japan (Units: t-CO₂)

HFCs	PFCs	SF ₆	Other	Total
1,468	1,856	6,740	18	10,082

Material Safety Data Sheets*

We are sharing MSDS safety information on all chemicals newly introduced at any plant by using a database hosted on our intranet. Because information searches can be conducted from all plants, any user can determine the toxicity and hazard level for each individual chemical, and make a decision on whether or not to use it.

In addition, MSDS documentation is placed at all locations in TEL where chemicals are used, and steps are taken to prepare for emergencies such as leaks and explosions.

*Material Safety Data Sheets (MSDS): Documents with information that is used to accurately determine the toxicity and proper handling of chemical substances.



Screenshot of an intranet search

PCB Storage

Japan's Law Concerning Special Measures against PCB Waste entered into force in July 2001. In accordance with this law, we are rigorously controlling waste that contains PCBs and submitting reports each year to the local prefectural governors about the status of storage and disposal of PCB waste. The status of storage at TEL is shown below.

Storage of Equipment Containing PCBs (Sites in Japan)

Transformers	2 sets
Capacitors	4 sets

TOPICS

Independent Controls at Each Site: Yamanashi Region

In the Yamanashi region (Fujii and Hosaka plants), highly hazardous gases such as chlorine and special high pressure gases like monosilane are used in the process development. Strict controls are in place to prevent even that the slightest leak, but in the unlikely event that a problem occurs, a centrally-monitored system can detect even minute leaks and automatically interrupt the supply of the gas.

In addition, these plants have created their own lists of substances for which purchasing is prohibited. The list includes nine organochlorine solvents and seven heavy metals, for a total of 16 items. If for some reason it is absolutely necessary to use one of these substances, the plant rules require a two-step review before approval. The plants have established voluntary wastewater standards that are stricter than those of the local prefecture, and are working to keep transfers of hazardous substances into the environment to the absolute minimum.



Central monitoring room

Manager's Comment

In the Yamanashi region we are using about 1,000 types of chemical substances and products, and in terms of both number and amounts, this is more than any other company in TEL. We take extra precautions for safety and the environment with a system that requires review and approval before introducing or using a new substance. Using our own numbering system, we have created an easy to use system that relies on a registry of chemical substances and products to prevent mistaken use. For very common chemicals like sulfuric acid and hydrochloric acid, we have a pool system that eliminates waste from purchasing and use.

Shimpei Jinnouchi

Environmental Occupational Health & Safety Center,
Tokyo Electron AT Limited

EHS Management System (Part 1)

TEL is promoting environment, health and safety (EHS) activities globally.

Organizational Structure for EHS

At TEL, to keep up with globalization of our EHS activities, we have formed a Global EHS Committee comprised of the president and corporate directors of Tokyo Electron, and EHS directors. As the heads of this committee, they decide on the policies and directions of TEL EHS-related activities. EHS activities are structured in terms of three pillars: "Factory and Office EHS," "Customer-site EHS" and "Product EHS."

Factory and office EHS

We are promoting local EHS activities in each region through TEL Safety and Health Committee, consisting of representatives of office facilities, and TEL EHS Committee, consisting of representatives of the manufacturing plants. At the manufacturing plants, we carry out EHS activities through the EHS Management System, and at the office facilities we are creating an environmental management system through what we call TEL Eco-Activity (see page 22).

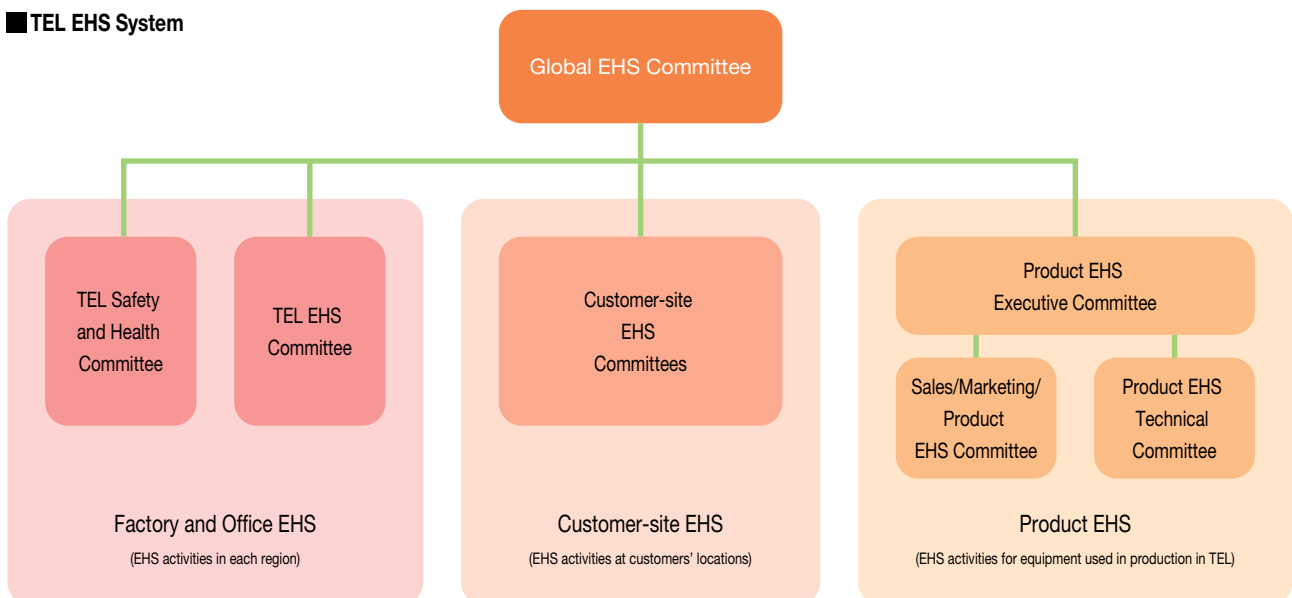
Customer-site EHS

Through the Customer-site EHS Committee, consisting of representatives of business units that conduct work at customer sites plus representatives of each country, we are promoting EHS for work conducted at the customer's location. The committee ensures that our work is in compliance with legal requirements and local working methods, and communicates with and supports local organizations concerning EHS matters.

Product EHS

We are promoting EHS in our products, with the Product EHS Executive Committee at the top of the structure, consisting of the executive officers in charge of development, marketing, and sales plus the EHS directors of each business unit. Subcommittees include the Sales/Marketing/Product EHS Committee and the Product EHS Technical Committee. It is important that the EHS concepts clearly state those factors which the customer requires and that these be incorporated at the initial development phase and design phase of products. Also, with the globalization of TEL, we must comply with the laws of each country in which we do business. For this purpose, we are actively promoting what we call "DF EHS" (Design for EHS).

TEL EHS System



Stance on EHS Management

Each manufacturing site has created an environmental management system and has been certified based on ISO14001. In addition, we have begun to create an occupational safety and health management system based on OHSAS18001 and guidelines of Japan's Ministry of Health, Labour and Welfare. Our office facilities have introduced simplified independent environmental management systems we call "TEL Eco-Activity."



ISO14001 Certificate

Implementing the EHS Management System

At each facility, using environmental impact assessments, we ascertain and prioritize the environmental impact of the environmental dimensions associated with our services and the development and manufacturing of products. In addition, by performing assessments we ascertain the risks relating to safety and health aspects of operations, and assign priorities accordingly. For the environmental aspects and risks that have been identified, in order to reduce the risks, we develop a program (Plan), systematically conduct improvement activities (Do), confirm the progress (Check) and then review everything (Act), with what is known as a PDCA cycle.

Structure of EHS Management System



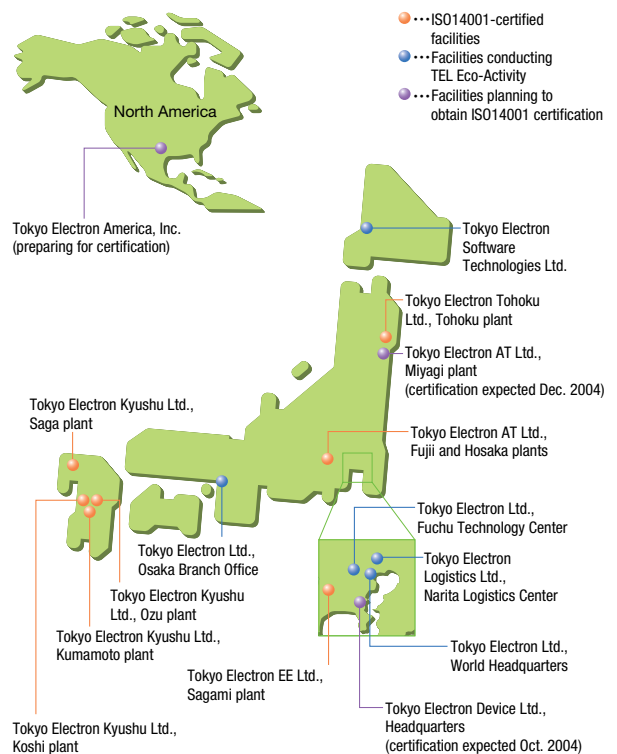
TEL Eco-Activity

Within TEL, we have created our own TEL Eco-Activity environmental management system based on ISO14001. We have been promoting TEL Eco-Activity in office facilities since last year. Our Fuchu Technology Center established targets of reducing electricity usage by 5% compared to the previous year, improving recycling, and cleaning along the roads our employees use for commuting. Regarding energy conservation, we implemented changes in temperature settings of air conditioners and turning lights off policy during lunch breaks. In the future we will continue with energy and resource conservation activities, and encourage everyone to work to meet the targets. In addition, we have gone further with TEL Eco-Activity at the Tokyo Electron Device headquarters and plan to obtain ISO14001 certification by October 2004.



TEL Eco-Activity Management Program

Status of ISO14001 Certification and TEL Eco-Activities



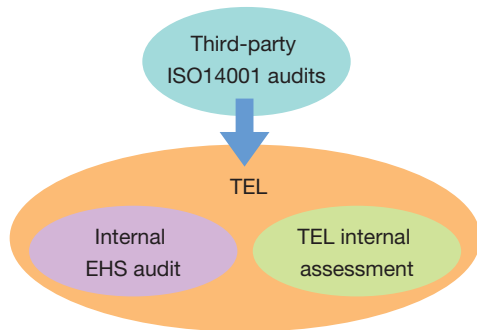
EHS Management System (Part 2)

We are conducting comprehensive checks of the EHS Management System.

Stance and Organization for Checking EHS Activities

In order to strengthen the EHS Management System at TEL, we are enhancing the auditing aspects of the system that are responsible for the “checking” functions of the PDCA cycle. Through auditing and other means we check up on systems and performance from multiple dimensions—which could be broadly described as internal, Group and third-party checks.

System for Checking EHS Activities



TEL Internal Assessment

TEL has been actively implementing internal EHS audits, conducted by each facility, and ISO14001 environmental management system audits by third-party organizations. But we felt that these auditing methods alone were not enough, so in FY 2003 we started “TEL internal assessment” conducted by EHS representatives from each facility, as peer assessments on EHS items.

By having the facilities in TEL conduct peer assessments, we are striving to determine the status of TEL facilities overall, and this will lead to uniformity and improvement of EHS activities. During FY 2003, we conducted assessments on management-level initiatives, legal compliance, and responsibilities/structures, based on TEL regulations for work safety. In FY 2004, we will select new themes and details and work to make further improvements.



A site inspection underway

Legal and Regulatory Compliance

At TEL, our approach to legal and regulatory compliance is to consider environmental legislation and ordinances and emissions standards, and to set our own voluntary standards at even more stringent levels. Through the cumulative effects of our day-to-day activities, such as checks on the management of chemical substances and pH levels in water, we are clearing our own tough standards. As one example of how we do this, at the Hosaka plant, before final discharge of wastewater we confirm the pH level and other parameters of some of the effluent in an in-house storage tank.

Thanks to these efforts, no lawsuits arose during FY 2003 in connection with accidents, violations, penalties or complaints, and no economic sanctions or incentives were used by the government.



Wastewater storage tank before final discharge

TOPICS

Measuring Soil and Rainwater Peretration

Since obtaining ISO14001 certification at the Sagami plant in FY 1998, we have been conducting measurements of soil and of a rainwater that has penetrated the soil. We are measuring rainwater from an observation hole and a rainwater penetration chamber, targeting organochlorine compounds that TEL has used in the past, in addition to ten chemical substances.



Soil testing

We are conducting measurements every year, and as a result, are verifying our state of compliance with environmental quality standards, prefectural ordinances and so on for soil and water quality.

Soil Testing Results

Test items	TEL standards	Test results
Lead and its compounds	0.01 mg/l	Less than 0.005 mg/l
Phenols	0.5 mg/l	Less than 0.003 mg/l
Copper and its compounds	1 mg/l	Less than 0.05 mg/l
Zinc and its compounds	1 mg/l	0.11 mg/l
Iron and its compounds	3 mg/l	Less than 0.05 mg/l
Manganese and its compounds	1 mg/l	Less than 0.02 mg/l
Chromium and its compounds	2 mg/l	Less than 0.05 mg/l
Fluorine compounds	0.8 mg/l	Less than 0.1 mg/l

In FY 2003, 18 items were tested, including the eight shown here.

Environmental Accounting

We are more accurately determining the costs and benefits of environmental activities and using this knowledge in management.

Stance on Environmental Accounting

Environmental accounting is a management tool that helps to determine the costs and benefits of a company's environmental activities. At TEL, we have introduced an environmental accounting system to determine quantitatively the costs of the environmental aspects of our business, and we are using this information to guide corporate activities.

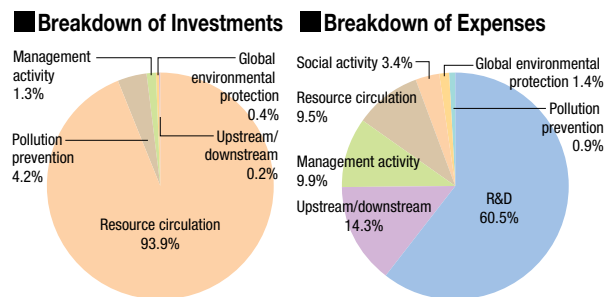
FY 2003 is the fourth year since the introduction of the environmental accounting system, and we have made greater efforts this year to improve the accuracy of information about both the investments and expenses for environmental activities. Our aim is to make our environmental activities sustainable.

Our environmental accounting complies with the Environmental Accounting Guidelines (2002 Edition) and Environmental Accounting Guidebook from Japan's Ministry of the Environment.

Environmental Preservation Costs

The costs of environmental preservation (investments and expenses) for FY 2003 can be seen in the tables and figures below.

The data covers TEL facilities in Japan. Depreciation on investments in facilities is calculated as an expense beginning with the investments made in FY 2000.



Environmental Protection Costs in FY 2003

Locations covered: All TEL facilities in Japan (Sapporo, Tohoku, Miyagi, Akasaka, Fuchu, Yokohama, Sagami, Hosaka, Fujii, KTC, Osaka, Saga, Kumamoto, Koshi, Ozu)
 Period covered: April 1, 2002 to March 31, 2003

Units: 1,000 yen

Classifications of Environmental Costs	Details of main initiatives(facilities, supplies, leases, depreciation, maintenance, etc.)	Investment amount	Expense amount
1. Business area cost		336,302	753,216
Itemization			
1.1 Pollution prevention costs	Prevention of air pollution, water pollution, soil contamination, etc.	320,631	179,697
1.2 Global environmental costs	Climate change prevention, ozone layer protection, etc.	1,481	73,187
1.3 Resource circulation costs	Efficient use of resources, waste reduction, etc.	14,190	500,332
2.Upstream/downstream costs	Green purchasing, green procurement, etc.	637	752,999
3.Management activity costs	Environmental education, monitoring and measuring environmental impacts, etc.	4,530	522,737
4.Research and development costs	Product R&D, etc.	0	3,179,925
5.Social activity costs	Planting trees and vegetation, supporting local environmental activities, information provision, etc.	0	46,012
6.Environmental damage costs	Repairing damage to the natural environment, etc.	0	0
7.Other activities	other	0	0
Total		341,469	5,254,889

Benefits of Environmental Activities

The results of calculations of the economic benefits of environmental preservation activities are shown in the table below.

Concerning categories of environmental accounting, this report covers only the economic effects of environmental protection activities.

Economic Benefits of Environmental Protection Activities in FY 2003

Locations covered: TEL facilities in Japan (Sapporo, Tohoku, Miyagi, Akasaka, Fuchu, Sagami, Hosaka, Fujii, Osaka, Saga, Kumamoto, Koshi, Ozu)
 Period covered: April 1, 2002 to March 31, 2003

Units: 1,000 yen

Classifications of environmental costs	Details	Amount	
Cost reduction	Benefits relating to electricity and other energy	Reduced electricity usage	71,660
	Water-related benefits	Reduced water usage	14,631
	Paper-related benefits	Reduced paper usage	57,621
	Resource-related benefits	Reduced resource usage	26,423
	Waste-related benefits	Reduced waste volume	15,790
	Other benefits		0
Cost reduction subtotal		186,125	
Profits	Waste-related benefits	Profits from recycling (salvageable materials)	1,268
	Other benefits	Public relations effect (equivalent TV/newspaper advertising cost)	1,500
Profit subtotal		2,768	
Grand total		188,893	

Health and Safety

Health and safety form the very foundation of work practices and are driving forces for the betterment of society. We treat health and safety as top priorities in our corporate activities.

For the Safety of Everyone

At TEL, we are aware that health and safety are important issues, and have given them an important place in our statement of Management Philosophy. We believe that ensuring the safety and health of employees and customers—and every single person who has any connection with business—is a part of fulfilling our social responsibility as a company, and will lead to good business.

Specifically, this means that profits and deadlines should never be prioritized in such a way as to compromise human safety or the safety of facilities and equipment. To raise the safety awareness of employees, TEL has created “Safety First” posters and posts them in places where they can easily be seen.

In addition, in order to convey our thinking on this topic to customers and a wide range of other stakeholders, we have printed a “Introducing Safety First Culture Awareness.”



“Safety First” poster



The “Introducing Safety First Culture Awareness”

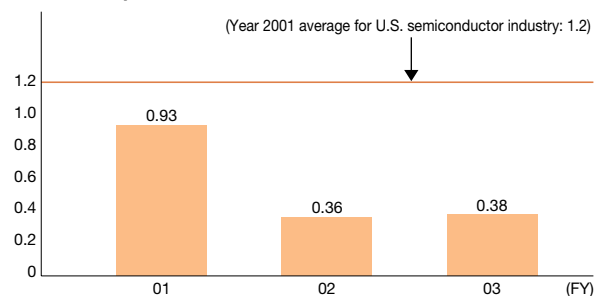
Accident Prevention: Handling of Accident Reports

Any accident involving TEL employees is reported to our headquarters. When the accident report is received, the seriousness of the incident is judged based on a set of criteria (human injury, fire/explosion, gas/chemical leak, serious damage for customer and so on). Accidents that have an element of urgency are reported to top management and simultaneously in an accident bulletin to Group companies.

In addition, we are operating an “EHS Bulletin” on the TEL intranet. Using this system, if an accident arises it is possible to immediately issue a detailed company-wide bulletin in an effort to prevent similar occurrences. Besides such accident bulletins, we aim to improve safety measures by posting information through alerts, EHS notices, and other forms. Information is also transmitted to Group members overseas.

The following graph of accidents per 200,000 work hours reveals a lower figure for the entire TEL than the average figure for the overall U.S. semiconductor industry.

Accidents per 200,000 Work Hours



TOPICS

Promoting Safe Driving by Providing Accident Information

A map has been created of the area of Yamanashi region around Tokyo Electron AT’s Fujii and Hosaka plants, showing locations of accidents involving TEL employees. This map helps to raise awareness about traffic safety.

This map shows at a glance where the accidents are most concentrated, allowing employees to learn what types of accidents, and where they are occurring on the roads that they regularly travel.

At the Tokyo Electron AT Miyagi plant, after producing a map similar to the one of the Yamanashi region, the local police office provided them with some new traffic accident data. TEL employees utilized

this additional information to create a more comprehensive accident hotspot map, and donated it to the police office. Besides activities such as these, the company health and safety committees in each region are treating traffic safety as a vital safety issue for employees, through activities such as seatbelt checks, monitoring stop sign obedience, checking driving conditions on snowy roads, and cooperating with police in traffic safety education.



Hazard map at the Fujii area

Accident Prevention: Recognizing Human Nature

TEL is promoting accident prevention based on an understanding of human nature, with a focus on the human factor in the causes of accidents.

At TEL manufacturing plants, we are implementing Site-based EHS training. This training is based on actual examples of accidents, and use the M-SHEL Method* to help identify the accident cause, to learn about human nature and the mechanisms that trigger human error, and to use the new understanding gained to help prevent the recurrence of similar accidents.

To minimize the damage or injury in the event of an accident, we aggressively promote wearing of personal protective equipment (safety helmet, safety glass, safety shoes) in the cleanrooms. In addition, TEL has developed original equipment such as a metallic barricade to prevent personnel or materials from falling.

*M-SHEL Method: An accident-analysis method that involves the actual person who was involved in an accident, which investigates the conditions surrounding that person from various perspectives, including software, hardware, environment and live-ware, as well as management, which overarches them all. It also helps identify possible prevention measures.

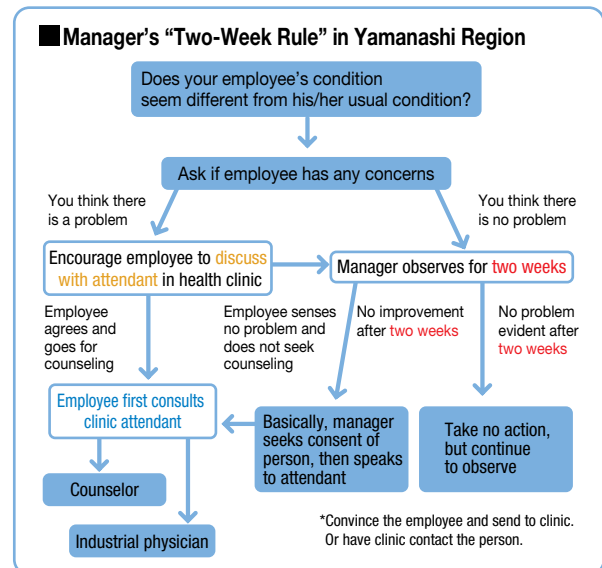


Metallic barricade

Counseling

TEL has a nurse's office in each of its regions, which provides health counseling and guidance after health checkups, and can provide first aid for illness and injury. In addition, we routinely offer counseling with industrial physicians and experts such as industrial counselor and head of the Japan Industrial Counseling Center, Dr. Yoko Nohara, a clinical psychotherapist.

These services give employees the opportunity to discuss matters with experts regarding their mental health or other concerns. We have created a climate where employees can easily drop in at the health clinic for any concerns about mental or physical health.



TOPICS

Health and Safety Activities in Korea



Tokyo Electron Korea uses eye-catching posters with safety messages to promote an accident-free workplace.

●Poster:
"No accident!
Are you doing a daily safety check?"

Health and Safety Activities in Taiwan

Tokyo Electron Taiwan is bringing safety education directly to customers, about the features of TEL products and risks that come with the larger equipment. The education includes the TEL stance on safety, and explanations about what to watch out for in terms of safety when using our products, with examples of actual potential accidents. Through these efforts and by actively providing information, we are helping to ensure customer safety and fulfilling our social responsibility.



Safety education is a joint effort with customers

EHS Education

It is TEL's duty to work for the protection of the environment, health and safety. We implement a variety of educational and awareness-raising programs on the principle of providing the necessary education to the people who need it.

Stance on EHS Education and Awareness

At TEL, we have a principle regarding the environment, health and safety—to provide the necessary education to the people who need it. We conduct the necessary education and training at different personnel levels—for our own employees and employees from partner companies who work in-house at TEL companies. When they enter the company, the environment, health and safety are among the required topics of their training.

■ EHS Education

- Expert training (Special training for internal environmental auditing, and for important environmental aspects)
- Environmental training based on ISO14001 (for manufacturing plants)
- Environmental education for TEL Eco-Activity (office facilities)

Environment

- Equipment-specific training
- Training for employees who go to customers' plants
- Safety training for employees going overseas
- Advanced safety training (see Topics)
- Basic safety training

Health and Safety

Other education and training: emergency lifesaving classes (CPR, first aid skills), legal education (supervisor training, special operations, etc.).

Implementing Environmental Education

At office facilities of TEL, we provide standard environmental education for all employees, including sales and administrative staff, field engineers, and part-time and temporary employees.

At manufacturing plants, as a part of an education based on ISO14001 we provide all employees with education about the environmental objectives and targets of the office. And in TEL, by providing examples and education outside the company, we contribute to environmental activities in the local community. The Tohoku plant offered case examples of its efforts (through waste management and energy conservation) to reduce environmental impact to the Iwate Prefecture Environmental Protection Association, which is made up of local corporations.



Explaining the Tohoku plant's environmental efforts to local businesses

Implementing Safety Education

In order to promote Safety First at TEL, we are conducting safety education specific to the nature of the job, for personnel who work in the office, in the cleanrooms, and at customer sites. The validity of this training is given an expiration date, so personnel are required to take a refresher within a certain time period.

In addition, we hold emergency lifesaving lessons (CPR, first aid) so that they can acquire the skills they would need in the event of a disaster.



Emergency lifesaving class

TOPICS

Advanced Safety Training

The safety training at TEL is divided into two types: basic safety training for employees, and advanced safety training for those employees who will work at factories (TEL's or customers'). This advanced safety training is for new employees and mid-career hires, and includes group training with actual practice in putting on safety wear and using safety equipment. They are also required to take a refresher class before the one-year validity of the course expires. The refresher course consists of Web-based training on the company intranet, so even field engineers who work at customer sites and others who would have difficulty taking the time to attend classes can easily fit the refresher into their own personalized schedule. With the Web-based training, they learn about working in high and enclosed spaces, the handling of chemical substances, and preventing electrical risks, as well as actual accidents that have occurred. This safety education is supplemented based on considerations made concerning the unique features of each country, including each country's laws, for field engineers of companies overseas. We are further using our experience creating the teaching materials to help develop a unified safety curriculum for equipment manufacturers, now under review by the Semiconductor Equipment Association of Japan (SEAJ).



Web-based advanced safety training

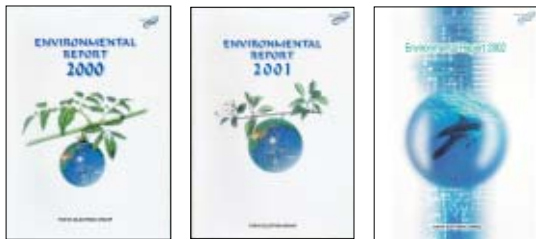
Communication with Stakeholders

We believe that promoting communication with all our various stakeholders will lead to growth of the TEL.

Stance on Environmental Communication

TEL is working to reduce the environmental impact arising from business activities, and is actively working on health and safety issues. To promote these activities as effectively as possible, it is essential that everyone involved in the companies' activities disseminate and share the appropriate information to the greatest extent possible and work toward better communication. TEL has been publishing environmental reports since the year 2000, and these reports as well as other information about TEL's approaches to the environment, health and safety are available on our Web site.

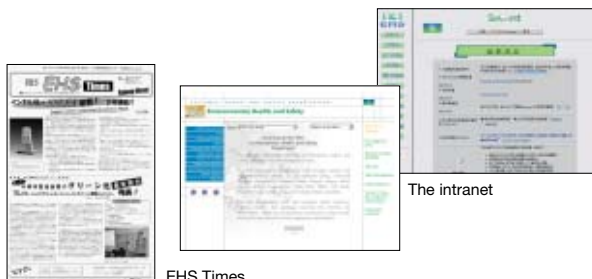
 <http://www.tel.com>



Environmental Report 2000 Environmental Report 2001 Environmental Report 2002

Publishing the EHS Times and Using the Intranet

TEL publishes the EHS Times as an in-house magazine on EHS. In it, we introduce in understandable terms a variety of information relating to EHS, such as the discussions of each committee, and initiatives in each Group company and region. Such EHS-related newsletters are being made by each company and in each region, and play an important role in spreading awareness about EHS issues. Also each company and region is actively using the intranet to post and exchange information. In particular, the departments in charge of EHS in overseas offices are working to share information by introducing the particular laws of each country and examples of local customs.



EHS Times

The intranet

EHS Seminars in Taiwan

In 2002 we repeated the TEL EHS Seminar in Hsinchu for our Taiwanese customers after the first offering the previous year. Many customers participated, and personnel from various TEL business units made presentations on the TEL stances on the environment, health and safety, on the results of LCA of our products, energy conservation examples, the uses of our products, and points to consider when using them. At the end of the seminar there was an active question-and-answer period about the safety of tools and TEL's initiatives.

In the future we plan to continue holding this seminar, and to provide information such as the environmental and safety aspects of our products.



EHS seminar in Taiwan

Activities in the Industry

TEL is a member of the Semiconductor Equipment Association of Japan (SEAJ) and is actively communicating with the industry about environmental activities. Specifically, we participate in the environmental committee of SEAJ, and have cooperated in the creation of Ecodesign Guidelines and Green Procurement Guidelines. In Ecodesign Guidelines we helped formulate guidelines relating to LCA methods for semiconductor manufacturing equipment as well as energy conservation, hazardous substances, and reduce/reuse/recycle initiatives for this equipment. In the Green Procurement Guidelines, we summarized methods to tackle environmental issues in cooperation with suppliers. In formulating these guidelines, we were able to use the foundations built by our own experiences in LCA and green purchasing in TEL over the past few years.



Presentation at the Forum on Semiconductor Manufacturing Technology

Societal Contribution

Our principle of respect for people is the basis for our initiatives to contribute to communities in Japan and overseas.

Stance on Societal Contributions

TEL has encapsulated its corporate message to treat people well and provide value that makes them happy, in the words "People. Technology. Commitment."

TEL is expanding a global business to provide value-added products and services to its customers and to everyone around us, and to obtain the highest value. At the core of this drive is the respect for people that has been part of our corporate philosophy since the company was first established. "Believe in the creativity and limitless potential of employees and all people, respect different cultures and a diversity of values." "Give top priority to human health, and consider also the protection of the environment." "Embrace with enthusiasm." These are all a part of our approach to life and work.

Also, as part of our corporate principles, TEL strives to spread awareness about corporate social responsibility, the environment, health and safety. The offices and plants of TEL work to build relationships of trust with the local governments and communities, and carry out a variety of activities to contribute to society and environmental protection as a whole.

As we expand such activities as an important part of our corporate mission, we would like to move forward together with our customers and society as a whole.

Activities in Japan

● Tokyo Electron Tohoku, Tohoku Plant

As a part of our activities to contribute to the community, we have been participating since 1990 in the annual Esashi Jinku Festival in Iwate Prefecture. The festival originated in a traditional fire-prevention festival in which only the village brigades performed, but in 1977 it became a participatory-style festival that anyone could join. The festival includes a variety of events such as a large parade with 3,000 participants, local food stalls, and performance of local arts. Our employees, particularly the newer ones, always participate in the festival. Every year the employees practice after work to perform in the festival, and their involvement is strengthening our connections with the local community.



Esashi Jinku Festival

● Tokyo Electron Fuchu Technology Center

The Tokyo Electron Fuchu Technology Center cooperates with the Asahi Photo News Co.'s special project, a traffic accident prevention campaign. This year as a part of a campaign to prevent accidents involving children, we donated an Asahi Photo News bulletin board that carried traffic safety slogans, and included our company name, to the nearby Fuchu Sumiyoshi primary school.



Donated Asahi Photo News, Message board

● Tokyo Electron Kyushu, Saga Plant

At an award ceremony held at the Meiji Shrine to commemorate the 125th anniversary of the Japan Red Cross Society and the 50th anniversary of the Red Cross Law, Saga plant received recognition for having made a significant contribution by cooperating in blood donor drives.



Letter of recognition from the Japan Red Cross Society

● Tokyo Electron Kyushu, Koshi Plant – Youth Forum –

The International Environmental Citizen's Conference Kumamoto 2002 was held October 26-30, 2002, as a citizens' environmental conference by non-governmental organizations and other citizen groups. The Koshi plant participated in the Youth Forum during this event. This forum was targeted at students, and provided an opportunity for the environmental managers of corporations and NGO activists to exchange opinions. At the venue, participating companies and organizations set up tables, and students could approach the company or organization of their choice and ask questions. Many students approached the 27 participating companies and organizations to talk to their representatives. At the Tokyo Electron Kyushu, table discussions centered on the fact that help is needed from a variety of fields in order to solve these environmental problems. It was a valuable time for direct exchanges of opinion between students and the company.



Scenes from the Youth Forum

Activities Overseas

● Tokyo Electron America

TEL is actively contributing to the community not only in Japan, but also at our locations overseas, especially in the United States.

① Supporting the 2002 Diabetes Walk

On October 27, 2002, 10 employees from Tokyo Electron America Santa Clara and Timbre, participated in the Juvenile Diabetes Research Foundation Walk held at the Shoreline Park in Mountain View, California. Austin office also participated, with 25 walkers who raised \$7500. They received the Silver award as one of the top 3 corporate walk teams in the



Juvenile Diabetes Research Foundation Walk

city. Tokyo Electron America also donated funds for this event. Across the U.S, the 2002 walk collected over \$70 million to support research for finding a cure for diabetes.

② "Adopt-a-Street" Clean-up

Tokyo Electron America (headquartered in Austin, Texas) participates in the Keep Austin Beautiful program. Part of this program is an "Adopt-a-Street" clean-up campaign. Once every three months, TEL cleans Grove Boulevard in front of TEA headquarters. TEA has been participating in the program since it was first launched, and is a key sponsor.

Keep Austin Beautiful honored TEL with an award for their Adopt-A-Street program at their annual luncheon in February 2003. In addition, TEA also received a National Citation of Merit in Keep Texas Beautiful's Environmental Competition for their participation in this program. Adopt-A-Street, a subsidiary program of Clean Streets, allows local groups to adopt streets near their establishment or residences. TEL served as the key sponsor for this Keep Austin Beautiful initiative and hosted the program's kickoff on Friday, April 12, 2002.



Receiving the Community Award For Litter Abatement

③ Texas Recycles Day

This year, the statewide environmental campaign known as "Texas Recycles Day" celebrated its tenth year. The slogan this year was "Re-Use." Compared to conventional recycling, repeated use of the same materials is considered a better alternative for solid waste management.

Tokyo Electron America, in conjunction with Keep Austin Beautiful (KAB), promoted the 10th anniversary by holding an information fair near the cafeteria of the Austin headquarters that provided tips on recycling on Friday, November 15, 2002. A recycling trivia contest also helped staff deepen their knowledge about recycling and environmental protection.

Other companies in Austin held similar information fairs to promote the 10th anniversary of Texas Recycles Day.



Recycle Day poster

TOPICS

Japanese Language and Culture Program

The Austin Japanese School was set up to provide an opportunity for children of Japanese employees at the Tokyo Electron America's headquarters in Austin to learn in concentrated classes with a curriculum similar to what is taught in schools in Japan. The classes are held on Saturdays, when local schools are closed. Initially, this school targeted the children of employees, and started with lessons held in the company's in-house training center. Eventually, people working at other local Japanese companies showed an interest in the school. In September 2000, it was moved to the Asian American Cultural Center in Austin, after which classes were opened to families from other companies, and the school became available to the public. In April 2002, it received formal approval from Japan's Ministry of Education, Culture, Sports, Science and Technology and Ministry of Foreign Affairs, and continues operating today. As of July 2003, about 90 students were registered.

As an aside, the school offers students and their families the opportunity to enjoy Japanese language and culture through sports days and other cultural events.

There are about 200 of these government-recognized Japanese schools around the world, supported especially by local Japanese associations, companies and volunteers.



Sports day at the Austin Japanese School

Comments from Stakeholders

We have received many comments on our environmental reports and business activities, and we do our best to incorporate them into future reports and activities.

Sony Corporation

1. Comments on the Tokyo Electron Environmental Reports

We believe that these are comprehensive environmental reports, based on guidelines presented by the Ministry of the Environment, and providing TEL's basic policies, efforts to reduce the environmental impact of both product and production, and important information on environmental management. We would like to see the following points clarified in the future.

- ① TEL shows how the energy and material flows relating to production, but we would also like to see more about the environmental burden (energy use, distribution, packing, disposal) associated with use of the products, as well as the overall burden, and the proportions of the burden between product and production.
- ② Under Eco Factory, the initiatives to reduce environmental burden are commendable, but the description is limited to stating what was done in general terms. We would like to see more detail about actual achievements in terms of numerical targets.
- ③ In terms of waste reduction, we would like to see more detail about activities such as explanations of TEL's situation, comments on whether or not the amount is high, and information on regarding what efforts are being made to reduce amounts—particularly for the Hosaka plant, which has the highest amount of waste disposal.
- ④ The energy consumption per unit of sales is stated to be twice the amount it was in FY 1998, but we would like to see future target amounts are.

2. TEL's Impression of EHS activities

We applaud the creation of the SEMI Akira Inoue EHS Award and the support for EHS activities in the global semiconductor industry. We are also strongly impressed by the company's leadership in the industry, through active implementation of efforts such as the SEMATECH product and environment seminars.

3. Sony's Impression of TEL

We value the presence of TEL in pioneering the development of leading-edge technologies for semiconductor production equipment and applying those results in equipment, as we have seen with the company's research on microwave plasma.

4. Hopes and Expectations

TEL has revealed its road map for reducing the inevitable environmental impact that occurs during the use of new semiconductor production equipment and is making progress in its targets. We would also like to see attention going into upgrades that can be done on existing equipment to reduce this environmental impact.

Junichi Aoyama and Yoshiaki Fujii

Environmental Affairs,
Microsystems Network Company,
Sony Corporation

SEMI*¹

(Semiconductor Equipment and Materials International)

Congratulations to Tokyo Electron Ltd. on Their Fourth Environmental Report

Not all the benefits and costs of operating a company appear in its traditional financial statements. Amongst the missing information are the environmental, health and safety effects of the operations of the company, and of the use of its products and services.

Responsible, caring companies are starting to provide this information voluntarily to the public, employees, customers, investors and other outside stakeholders.

TEL is amongst the leading companies in the semiconductor equipment and materials industry who are pioneering annual environmental, health and safety public reports. TEL is making their reports available freely in Japanese and English. The world-class quality of its reports is reflected by TEL's ranking for environmental performance amongst the top 3% of all Japanese manufacturing companies in 2002 in the respected annual survey conducted by Nihon Keizai Shimbun Inc. or "Nikkei," Japan's equivalent of the Wall Street Journal.

By preparing these reports, TEL demonstrates their commitment as a founding member of the Global Care initiative to seek excellence in measuring performance related to Global Care principles and in environmental, health and safety management practices.

As a coordinator of the Global Care initiative*² I am pleased to congratulate TEL's considerable efforts in preparing this informative Fourth Environmental Report.

*1 SEMI is a non-profit industrial association of the world's major manufacturers of equipment and materials for the production of semiconductors and FPDs.

*2 This consists of five basic principles that were drawn up by SEMI corporate members as an initiative of the entire industry to provide the framework to strengthen public commitments for management, leadership and innovation.

Mr. Rick Row

Senior EHS Engineer,
EHS Division,
SEMI

Site Report: Kumamoto and Koshi Plants

Each year in the Environmental Report, we report on the EHS initiatives of particular plants. Last year we introduced the Yamanashi plant. This year we turn our focus on the Kumamoto and Koshi plants.

Kumamoto is famous for its nature, history and culture, with abundant forests and groundwater, the Suizenji park, and the homes of famous Meiji Era writers. The Koshi plant is TEL new production center, with grounds covering about 155,000 square meters in the Kumamoto Semicon Technopark, which include a concentration of semiconductor-related companies. The Kumamoto plant has a 16-year history as the focal point of TEL operations in Kyushu.



Kumamoto plant



Koshi plant

The Koshi plant serves as the production center, and the Kumamoto plant as the performance evaluation, sales and service center for the TEL Coater/Developer equipment, which holds the top market share in its market sector.

EHS Activities in FY 2003

Overview of EHS Activities at the Kumamoto and Koshi Plants

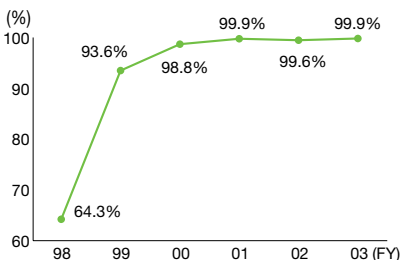
The Kumamoto and Koshi plants acquired ISO14001 certification in March 1998, and have been working to reduce environmental impact with a focus on energy and resource conservation as they work toward becoming zero-emissions factories.

- Koshi plant: Since FY 2002, this plant has been required to reduce its electrical consumption, because the consumption was rising and the plant was designated a Class 1 Energy Management Factory.
- Kumamoto plant: Because it conducts equipment evaluations, this plant has a high output of waste liquid chemicals from semiconductor processes, and it has been working toward zero—emissions of industrial waste.

Working Toward Zero Emissions of Industrial Waste

At the end of FY 2002, the last recycling challenge to boost the recycling rate above 99.58% was the disposal of vinyl chlorides. At the time, this waste was still being landfilled, but recycling began in FY 2003. Because of this change, the management expects to achieve a recycling rate of 100% at the Kumamoto and Koshi plants during FY 2004.

Recycling Rate of Industrial Waste at the Kumamoto/Koshi Plants



Occupational Health and Safety Activities Based on Risk Assessment

Under the EHS Management System (see pages 21-22), about 600 work-related risks* were identified in development, production and other processes, and a risk assessment was conducted on them. Based on the results of analyses, a variety of measures were implemented, targeting the work that generated those risks. For example, during the process of assembling the coater/developer equipment at the Koshi plant, workers were required to climb to the upper section of the



Raised work station and balancer

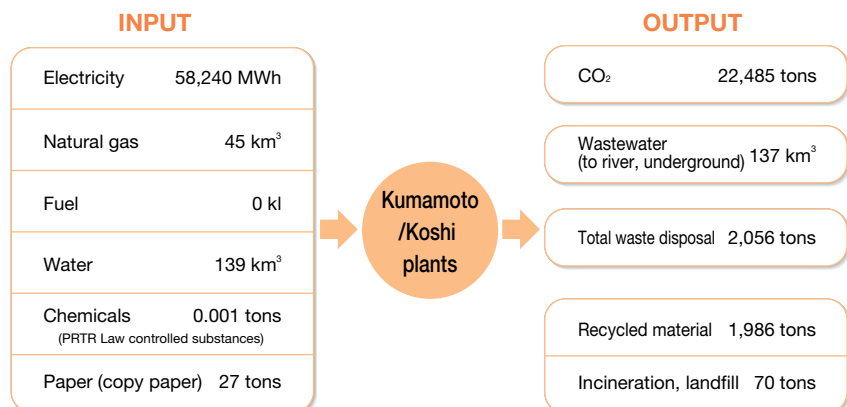
equipment and load a filter unit, a task that involved some risks. To address it, the plant introduced a raised work station and balancer (see photo).

*risk: Here "risk" refers both to the potential for a dangerous event to occur and its result.

Future Issues

After obtaining ISO14001 certification, the plants began thorough efforts to reduce environmental impact, and were proud to achieve corresponding results in FY 2003. Hereafter the plants' focus will be to reduce the environmental impact of TEL products during usage. In addition, in terms of worker health and safety, the plants will redouble their efforts and aim for a zero-accident record.


Material Flows at the Kumamoto/Koshi Plants (FY 2003)





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