

# Environmental and Social Report 2005



TOKYO ELECTRON LIMITED

## TEL's Credo on Environmental Preservation

### < TEL's Credo on Environmental Prevention >

The Tokyo Electron Group believes that preserving and continuously improving the global environment 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.

### < TEL's Principles on Environmental Preservation include: >

#### 1. Continuous Improvement

TEL recognizes that the products we manufacture affect the environment, and therefore, we, with our customers and suppliers, shall continually strive to minimize the environmental impact of our processes and operations.

#### 2. Knowledge

TEL continually strives to enhance its understanding of the impact that TEL's operations have 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 our 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 concepts and principles, as well as the progress of our ongoing contributions toward environmental protection with employees and the general public.

#### 5. Partnership

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

September 25, 1998

## TEL's Safety and Health Credo

### < TEL's Safety and Health Credo >

Safety and health training are required for all employees and board members at TEL. Our profit delivery date requirements, and time limitations must not be met at the sacrifice of human life and the safety of our facilities and equipment.

### < TEL's Principles on Safety and Health Preservation include:>

#### 1. Continuous Improvement

TEL is conscious that the factors that affect the safety and health of customers and our employees exist at the stage of manufacturing, transportation, installation, use, maintenance and service of our products, and based on this awareness, we shall continually strive to eliminate factors that impede the safety and health of our products.

#### 2. Knowledge

TEL continually strives to enhance our understanding of safety and health and improve these conditions for all people working in our sites. In addition, TEL aims to gain qualitative and quantitative grasps of safety and health factors on TEL Group activities and operations.

#### 3. Performance Criteria

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

#### 4. Disclosure

TEL shares information about its safety and health credo, policies and the progress of our safety and health activities with all board members and employees, and publish the general public our progress as the need arises.

#### 5. Partnership

TEL actively participates in safety and health activities practiced by our customers, suppliers and communities.

November 27, 1998

## Editorial Policy

Tokyo Electron (TEL) has published an environmental report every year since FY 2001 to describe our efforts in the issues of the environment, health and safety and our social contribution activities. In addition to those topics, this year our report also covers our social activities. We have prepared this report to be as easy as possible to read and understand so that our readers can get a good grasp of TEL's activities. Our goal in publishing these reports is to expand the scope of communication with everyone affected by or otherwise concerned with TEL. All readers are invited to tell us your opinions and impressions of this report and TEL, so that the editors can more adequately address your concerns in future reports.

In the planning of this report, we have used the Environmental Reporting Guidelines (2003) released by the Japan Environmental Ministry and the 2002 Sustainability Reporting Guidelines of the Global Reporting Initiative (GRI), an organization that provides international sustainability report guidelines.

## Scope

Organizations covered: Tokyo Electron Group

### <Japan>

Tokyo Electron Ltd., Tokyo Electron AT Ltd., Tokyo Electron Kyushu Ltd., Tokyo Electron Software Technologies Ltd., Tokyo Electron FE Ltd., Tokyo Electron Device Ltd., Tokyo Electron BP Ltd., Tokyo Electron Agency Ltd.

### <North America>

Tokyo Electron U.S. Holdings, Inc., Tokyo Electron America, Inc., Tokyo Electron Massachusetts, LLC., TEL Technology Center, America, LLC., Supercritical Systems, Inc., Timbre Technologies, Inc.

### <Europe>

Tokyo Electron Europe Ltd., Tokyo Electron Israel Ltd.

### <Asia>

Tokyo Electron Korea Ltd., Tokyo Electron Taiwan Ltd., Tokyo Electron (Shanghai) Ltd., Tokyo Electron (Shanghai) Logistic Center Ltd. (Company names as of August 2005)

Period covered: April 1, 2004 to March 31, 2005

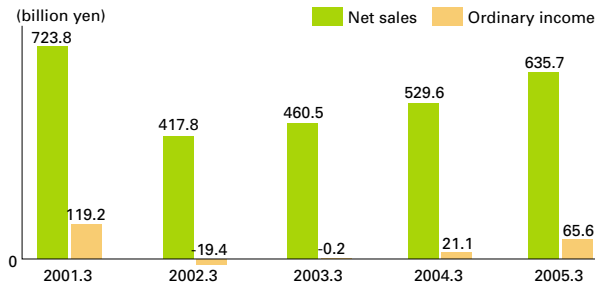
Areas covered: Environment, Society and Business

Updated reports on our environmental and social activities will be issued every year.

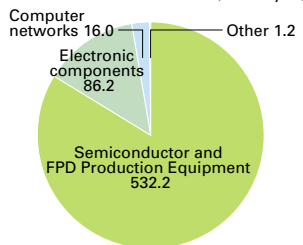
## Corporate Profile

Company Name: Tokyo Electron Limited (TEL)  
 Address: TBS Broadcast Center, 3-6 Akasaka  
 5-chome, Minato-ku, Tokyo 107-8481, Japan  
 TEL: +81-3-5561-7000  
 Established: November 11, 1963  
 Capital: ¥54,961,190,000 (as of April 1, 2005)  
 Main products: Semiconductor production equipment, flat  
 panel display (FPD) production equipment and  
 computer networks.  
 Employees: 1,026  
 (non-consolidated, as of April 1, 2005)

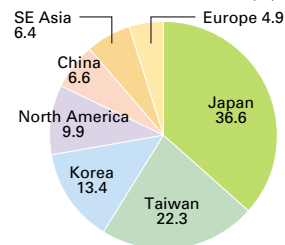
### Net Sales and Ordinary Income (Consolidated)



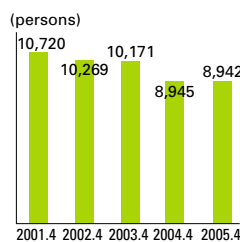
### Net Sales by Division (Consolidated)



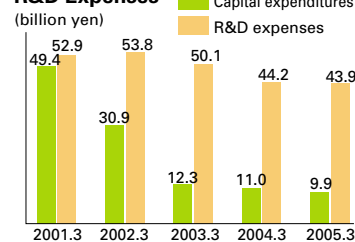
### Net Sales by Region (consolidated)



### Group Employees



### Capital Expenditures and R&D Expenses



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## Environment and Safety Activities Milestones

May1994 Standardization, Environment and Safety Center (Environment, Health & Safety Center) established  
 Mar1996 Product Safety Subcommittee (TEL Product EHS Technical Committee) launched  
 Apr 1996 Environmental Subcommittee (TEL EHS Committee) launched  
 Dec 1997 Sagami plant acquires ISO 14001 certification  
 Feb 1998 Tohoku plant acquires ISO 14001 certification  
 Mar 1998 Saga plant acquires ISO 14001 certification  
 Mar 1998 Kumamoto and Koshi plants acquire ISO 14001 certification  
 May1998 Yamanashi plant acquires ISO 14001 certification  
 Sep 1998 TEL Group Credo and Principles on Environmental Preservation established  
 Nov1998 TEL Group Credo and Principles on Safety & Health established  
 Jun 1999 Safety First policy established  
 Aug1999 Ozu plant acquires ISO 14001 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 started  
 Oct 2001 Green procurement launched  
 Oct 2001 Environmental training introduced in facilities not yet certified under ISO 14001  
 Apr 2002 Original "TEL Eco-Activity" (environmental management system based on ISO 14001) begun  
 Dec 2002 "TEL Internal Assessment" mutual auditing by environment or safety representatives from each facility started  
 Apr 2003 Lead-free Task Team activities started  
 Jul 2004 Yokohama office of Tokyo Electron Device acquires ISO 14001 certification  
 Mar 2005 Miyagi plant acquires ISO 14001 certification

# Commitment by Top Management

## Semiconductors in Modern Society and TEL's Commitment

The Japanese semiconductor market is worth about five trillion yen per year, only about 1% of the national gross domestic product (GDP) of 500 trillion yen. Still, considering other fields in which semiconductors have become indispensable – transportation, communications, finance, healthcare and education – semiconductors affect half the overall economy. It is no exaggeration to call semiconductors one of the driving industries in Japan.

When one considers the effects of semiconductors on our lives in realms besides economy and industry, it is abundantly clear that the semiconductor industry and related businesses, the sector to which our company belongs, have a powerful influence on society.

Semiconductors are part of the base of the modern information society. Not only do they stimulate the economy, they help to make our lives more convenient and comfortable, and they inspire dreams and hopes throughout society. Semiconductors must continue supporting the base of society, so that the ease and comfort we enjoy can be extended throughout the world in the future.

It is also essential for us in management to keep the four elements of environment, health, safety and quality in mind as we pursue business activities. It is to be expected that, in the short term, there will be trade-offs between these four elements and concerns for technological development and sales. We must clearly direct our employees to strive for the four elements. In the long term, there is no contradiction between these four elements on the one hand and technical progress and the advancement of civilization on the other. Showing that these goals are compatible is an important role of management.

## Semiconductors in the Future and the Role of TEL

The fundamental structure of semiconductors has changed little in spite of the continuous evolution wrought since they were first invented. Microprocessing technology has been the chief driving force during that evolution.

The fundamental structure of semiconductors was well chosen and has needed few major changes for several decades. But now, it is running into several limits imposed by the structure, including energy consumption due to heat generation and problems in trying to increase calculating speeds significantly beyond the current level. As semiconductors and the added value they bring spread around the world and come to impact every aspect of our lives, people will, more than ever, depend on them for solutions to problems like reducing energy consumption and raising the efficiency of electronic products. It is crucial to develop semiconductors which require even less energy to operate, while operating at even greater speeds.

In order to develop the next generation of semiconductors, we believe that industry must move away from the model in which each enterprise tailors itself to perform one function in isolation from other functions, and toward a model that aims to integrate expertise from many sources. Under this model, different nations and enterprises will lend their individual strengths to new partnerships. As a maker of semiconductor production equipment, we expect our role in the advancement of semiconductor technology to expand far beyond its present scope. TEL will never forget its duties as a leader of this industry to support and accelerate the coming technological innovation. Our stakeholders can count on our very best efforts to achieve a society that is both comfortable and inspiring for its members.



Tetsuro Higashi

Chairman & CEO

Tokyo Electron Limited

A handwritten signature in black ink, appearing to read 'T. Higashi'.

### **Efforts at Equipment Design Stage Drastically Reduce Environmental Burden**

We at TEL are quite aware of our social responsibilities to preserve the environment and maintain safety. We have been charged with this by the commitment of CEO Higashi. As the COO of the company, I would like to describe our plans for our environmental and safety activities.

Of the various stages in the life cycle of a piece of semiconductor production equipment, more energy and materials are consumed during mass production of the semiconductor itself than at any other stage. It is very important to consider the environment and safety during design of semiconductor production equipment in order to reduce its environmental burden.

Let me give two specific examples of our approach to this problem. One directly addresses reducing the energy consumption. This equipment does not actually operate all the time; much of the day is spent waiting. It is desirable to reduce the amount of energy consumed while equipment is on stand-by; the energy savings would be considerable. Our current development and design programs are going forward on that assumption. The second approach addresses the generation of greenhouse gases while the equipment is in operation. Up until now, we have required removal of these gases and used substitutes which pose a lighter environmental burden, but future designs will call for development of equipment which re-compresses and circulates gases.

TEL will not only pursue such designs in response to requirements from customers but also strive to conceive new ideas on our own, in order to reduce the environmental burden of our semiconductor production equipment during operation.

### **Consideration for Safety and Management of Employees**

As semiconductor production equipment has become larger and larger, operators increasingly must work in high locations and handle heavy components. Since the processes of semiconductor production also require use of materials which are toxic to the human body, operators must take many precautions in order to protect themselves. Safety procedures must be accounted for during equipment design and the builder of

the equipment needs to have a thorough knowledge of actual work operations in the semiconductor production plant. TEL employees are required to get thorough training in safety so that they will be familiar with proper procedures.

The semiconductor industry is subject to much higher fluctuations in demand than other industries, so the systems must be flexible, able to accommodate both peak and bottom volumes of sales. When a maker is increasing its workforce during busy periods and cutting back during slowdowns, new employees cannot amass much knowledge or experience in the technical realm or in environmental and safety measures. Thus, an essential part of our programs is to make all the tasks associated with development, manufacturing, start-up and process assessment as efficient as possible. Needless labor, which hampers programs to improve quality, must be eliminated. The goal in our new designs will be to allow variation in production volume with a constant number of employees.

### **Future Approaches to the Environment and Safety**

The conventional business model for making semiconductor production equipment has been to design that equipment in response to each customer's needs. This has delayed standardization. In recent years, however, TEL has begun to standardize equipment platforms and the modules which are integrated into the platforms. We look forward to speeding up this process, as it will pay off in increased quality and in more effective environmental and safety measures.

Our approaches are spurring activities throughout the industry to improve environmental performance and safety. TEL will continue to lead these efforts by example and, as part of the process, to address a wide range of issues.

**Kiyoshi Sato**

President & COO  
Tokyo Electron Limited



# Corporate Governance

Management at TEL emphasizes enhancement of corporate value while earning the trust of all of our stakeholders (people who have a stake in our success).

## Our Approaches to Corporate Governance

Reflecting the ongoing globalization of management practices, TEL's fundamental policy is to strictly observe standards for corporate ethics and to comply with laws and regulations. We are also dedicated to establishing and reinforcing internal control and risk management systems, and to maintaining the transparency and objectivity of our business activities. The primary objective of this policy is to conduct our business in a way that prioritizes the creation of corporate value while earning the trust of shareholders and all other stakeholders.

## On Our Corporate Governance System

TEL is implementing its corporate governance system with the following three goals:

- 1) Ensuring the transparency and soundness of business operations;
- 2) facilitating quick decision-making and the efficient execution of business operations;
- and 3) building an effective system for the timely and suitable disclosure of information.

We have adopted the corporate auditor system. TEL has a board of directors with twelve members, including two external directors, and we have four corporate auditors, two of whom are from outside the company. In addition, we have separated the functions of the directors from those of the executives who oversee business operations. The compensation of representative directors is determined by the Compensation Committee that is part of the board of directors. In addition, the Nomination Committee selects director candidates for submission to the general meeting of shareholders and a CEO candidate to be elected by the board of directors. Both committees consist of three members of the board of directors, excluding the Chairman and President. In April 2003, we adopted the executive officer system to further clarify the roles of the board of directors and executives in charge of business operations.

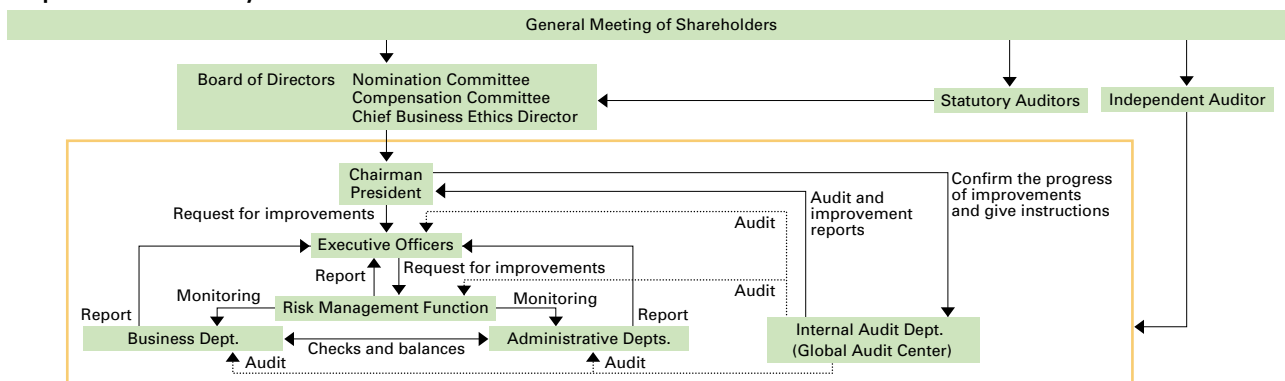
## Internal Control System and Risk Management System

All activities at TEL are based on adherence to the highest standards of corporate ethics and compliance with laws, regulations and international rules. To accomplish this, we have named a director to oversee ethics and established ethical standards and we are taking measures to see that these standards are strictly observed. Reflecting the even greater importance we now place on internal control and risk management systems, we have upgraded the internal audit functions of the Global Audit Center. We have also added to the General Affairs Department's crisis management functions, such as taking measures targeting business risk and operational risk.

## Changes to Dividend Policy and Executive Compensation System

TEL has adopted a new dividend policy with the goal of a 20% pay-out of consolidated net income from the fiscal year ended March 2006. Beginning with the fiscal year that ended March 2005, we also eliminated retirement allowances (which were fixed compensation) from the compensation of directors, statutory auditors and executive officers. This action was aimed at achieving further gains in corporate value and management transparency. Along with this revision, a part of the compensation for directors, auditors and executive officers has been linked to operating results, with an upper limit of 3% of consolidated net income. As a result, the portion of compensation that is based on results more clearly corresponds to consolidated net income and compensation is more closely connected to consolidated performance and share price.

## Corporate Governance System



# Compliance

**TEL is determined to carry out sound business activities in accordance with its corporate ethics and compliance with the law.**

## TEL's Approach to Corporate Ethics and Legal Compliance

Trust is and will always be the lifeline for TEL. The fundamental requirements for maintaining trust are rigorous conformity to our ethical standards and compliance with the law, by our employees as individuals, and by each of our organizations. Our ethics are stated as ethical restrictions on behavior, and legal compliance means to remain within legal restrictions. Both are necessary in order to maintain progress of the company in the right direction, like two wheels of a cart.

## Setting Ethical Standards

We believe that common standards must be applied throughout our divisions in order to create the globally excellent company that we envision for ourselves. We established specific ethical standards in 1998 to clarify our approach; at the same time, we established the Ethics Committee to oversee the implementation of those standards. We have created a booklet titled "Improving our ethics consciousness" (revised in 2002, 2003 and 2004) and distributed it to our employees in recent years.

### Ethical standards at TEL

- 1 Competitors
- 2 Reciprocal Transactions
- 3 Conflict of Interest
- 4 Giving and Receiving Gifts
- 5 Political Contributions Prohibited
- 6 Antisocial Movements and Organizations
- 7 Environment
- 8 Safety
- 9 Respect for Human Rights
- 10 Harassment
- 11 Improper Use of Company Assets
- 12 Investment in Stocks
- 13 Handling Trade Secrets
- 14 Execution

## Compliance Training

TEL has instituted a web-based compliance training system in which every employee is required to participate so that each will be able to correctly understand what compliance is and to do their tasks with the right attitude. This training presents the topics of compliance in the context of corporate activities, compliance issues in day-to-day activities, directives for risk management, and our compliance regulations. Courses were completed by about 6,300 employees in FY 2005.

## Information Disclosures Concerning Compliance and Emergency Management

We have begun providing information about compliance and risk management over the company intranet. Those messages contain information on a wide variety of topics, including division of tasks, compliance programs, BCP\*<sup>1</sup>, C-TPAT\*<sup>2</sup>, management of personal information, personal safety confirmation system, and ethical standards.

- \*1 BCP: Business Continuity Plan
- \*2 C-TPAT: Customs Trade Partnership against Terrorism, an anti-terrorism program under the auspices of the US Homeland Security Department, Bureau of Customs and Border Protection



Compliance and risk management website

## Hotline Established

If a employees member has witnessed speech or behavior which violates ethical or legal compliance standards, the member can use a special mailbox as a hotline to report it. The only people allowed to access the contents of the mailbox for ethical concerns are the ethics chairman and members of the Ethics Committee. The confidentiality of all information in those messages is guaranteed. The chairman and committee are committed to protecting the reporter's privacy while investigating the complaint fairly and honestly.

## Protection of Personal Information

Identity theft is becoming a major social problem. This has spurred calls to companies to take all appropriate care with the personal information they hold. TEL is very conscious of the law specifying protection of personal information, which went into effect in April 2005, and has released a basic directive and regulations for protection of personal information. We are moving as quickly as possible to establish detailed rules and finalize a security management system for guarding that information.

# TEL's Products

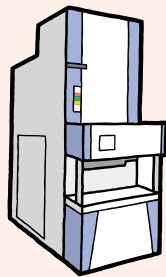
With its semiconductor production equipment, TEL provides a foundation for the digital network era.

## TEL Semiconductor Technology is All around Us

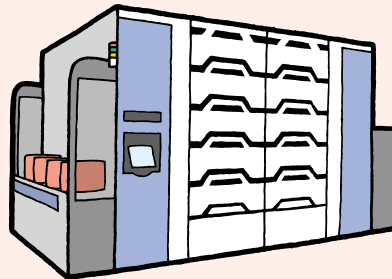
Many processes are required to produce semiconductors on thin silicon wafers. In the digital network era, finished semiconductors are used not only in personal computers and home electronics but in cars and many other common conveniences. Semiconductors are found in virtually every appliance now and used in every facet of our lives. In its role of developing and building the most advanced semiconductor production equipment, TEL is part of the basic support system for the modern society.

## TEL Offers Semiconductor Production Equipment

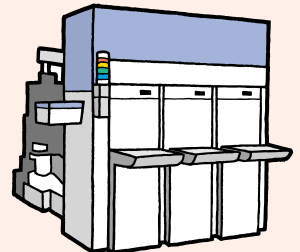
### TEL's Major Products



Thermal Processing Systems



Coater/Developers



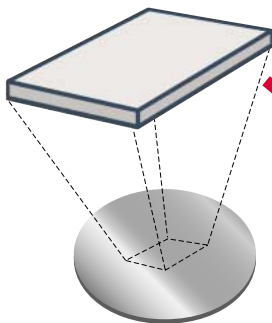
Plasma Etch Systems



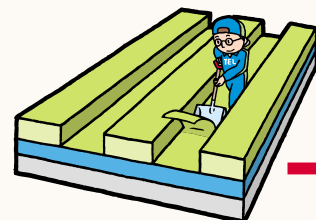
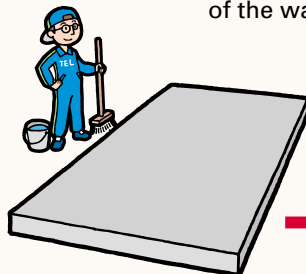
## TEL's Equipment is Used for Producing Semiconductors

### Semiconductor Production Processes

Layers are added to and then removed from the surface of the wafer, over and over again.



Silicon wafer



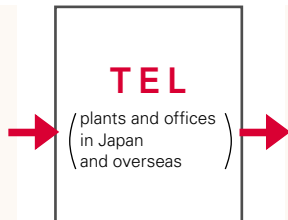
## Flow of Materials in TEL

TEL needs a great variety of the earth's resources to do its business. At the right is a figure showing how these materials flow through TEL's manufacturing plants and office facilities. The environmental burden is especially heavy during process assessment. This is because assessing the correct functioning of the equipment requires much electric power and various gases and chemicals. During process assessment, the equipment is observed while it performs the very same processes for which it will be used by the customer.

### Input

FY 2005, relative to FY 2004

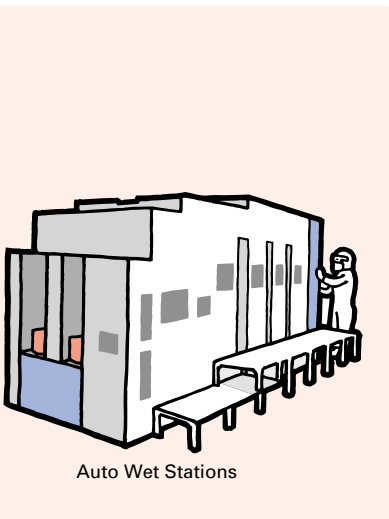
● Electric power	247,100 MWh	(+6.0%)
● Gases	794 km <sup>3</sup>	(+11.0%)
● Fuel	2,780 kl	(-3.8%)
● Water	1,004 km <sup>3</sup>	(-1.0%)
● Chemical substances (Class 1 materials under PRTR law)	11.3 t	(-22.1%)
● Paper (copy paper)	377 t	(+7.4%)



### Output

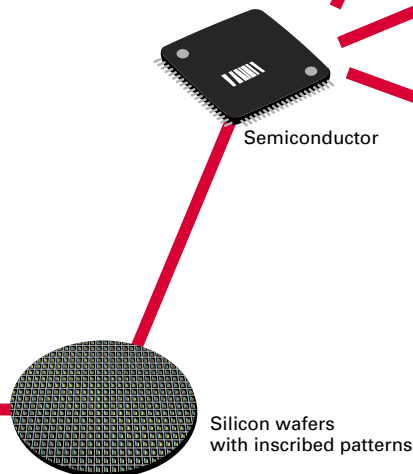
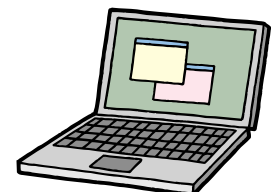
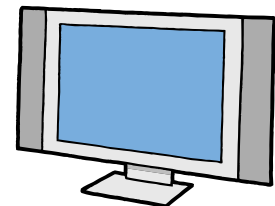
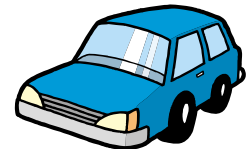
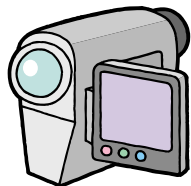
FY 2005, relative to FY 2004

● Total output of products	21,841 t	
● CO <sub>2</sub>	104,110 t	(+5.3%)
● NO <sub>x</sub>	11.4 t	(+2.7%)
● Wastewater	994 km <sup>3</sup>	(-1.0%)
● Total wastes	11,029 t	(-9.7%)
● Total recycled resources	10,597 t	(-6.7%)
● Total amount incinerated and sent to landfills	431 t	(-49.1%)



## Semiconductors Made by TEL's Equipment are Used Almost Everywhere

### Products Using Semiconductors



# TEL's Business

TEL is striving to obtain accurate estimates of and then reduce the environmental burden and safety hazards posed by its business activities.

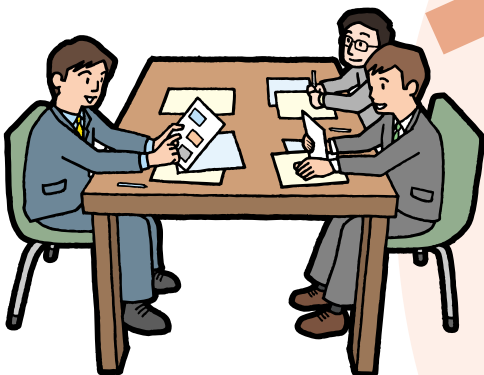
## Reducing Environmental Burden and Safety Hazards in Each Stage

This page describes the full course of development of EXPEDIUS, one of TEL's core products which we will use as a typical example of an auto wet station. The figure below shows the process, from the first meeting to discuss specifications to the operation of the actual equipment as it produces semiconductors on our customer sites. The figure highlights approaches taken for reducing the environmental burden and safety hazards. Those must be considered essential factors throughout this process.

TEL  
( Development and Manufacturing  
of Semiconductor Production Equipment )

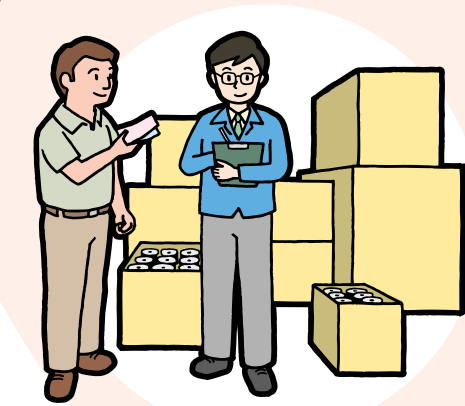
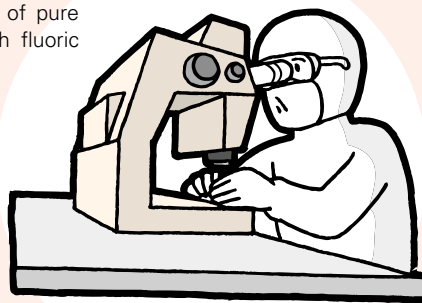
### 2 Process assessment

Following the customer's specifications, we test and observe the operation of the equipment while it is performing the semiconductor production processes the customer requires. We seek to reduce the amount of pure water used when EXPEDIUS cleans wafers with fluororic acid and alkaline chemicals (see p. 20).



### 1 Specifications meeting

Requests from customers concerning semiconductor production equipment mention more than cost and delivery schedule – customers are also deeply concerned about throughput (for productivity) and yield (for quality). In addition, there are increasing environmental and safety requirements recently.



### 4 Procurement

Some parts of our equipment are standardized components, but most are special-order. TEL believes in practicing green procurement from suppliers of components used in the EXPEDIUS. This includes procuring components that contain no lead or other harmful substances (see p. 20 - 21).



\* EXPEDIUS is developed and manufactured at the Saga plant of Tokyo Electron Kyushu Ltd.

The auto wet stations handled by our Surface Preparation Systems (SPS) BU clean wafers with pure water and a variety of chemicals. These remove particles and contaminations from the surface of the wafer while it is processed into semiconductors. The cutting-edge auto wet station EXPEDIUS reduces the amount of chemicals used and its high degree of product standardization allows shorter delivery and start-up times. It has been well received by our customers.

**Masaaki Hata**

General Manager  
Surface Preparation Systems BU,  
Tokyo Electron Limited



**3 Design**

We design our equipment according to the specifications given by the customer and the country in which the equipment is to be used. The effort we make in this stage to accommodate environmental and safety concerns pays off later in lower burden imposed by the equipment. EXPEDIUS offers a much smaller "footprint" than its previous models, saving space in the customer's facility. Future goals are to continue reducing the amount of lead in the equipment and to further standardize the specifications (see p. 20).



**6 Shipping and delivery**

We have begun using low-emissions trucks for deliveries to domestic customers. For overseas customers, equipment is packed in wooden frames and is usually air-delivered. Scrap lumber from the wooden frames is recycled and other measures are taken to minimize the environmental burden in this stage.

**5 Manufacturing**

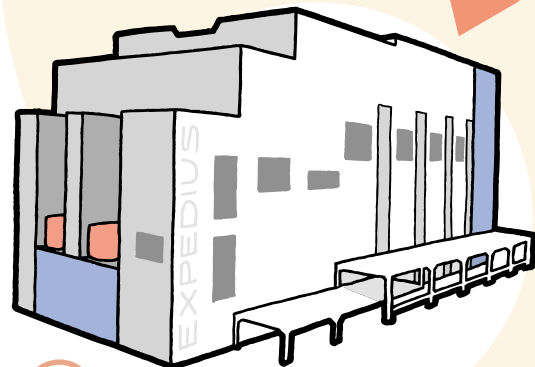
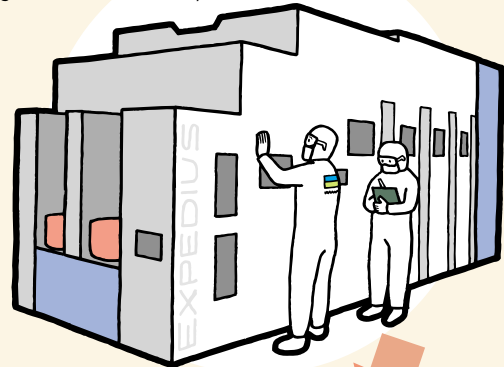
An important feature of our units and modules is how easy they are to integrate and to dock with each other; this reduces the environmental burden involved in assembly and inspection. The wastes generated during those stages are all recycled. Pure water is recirculated and cleaned in the Saga plant, reducing our water usage and lengthening life of components used to produce pure water (see p. 23 - 24). Another important factor to consider is safety (see p. 26 - 27).

About the auto wet station EXPEDIUS: Very fine impurities such as particles and dust cause fatal damage to semiconductors, which contain extremely fine circuitry on their surfaces. From the time the wafers are first brought into clean rooms until production of the devices is completed, they are cleaned with hydrochloric acid, sulfuric acid, fluoric acid, pure water and other substances before and after every single process in order to remove the unwanted substances. Different kinds of cleanings are required before and after the different processes, so the versatile auto wet station EXPEDIUS is capable of a variety of cleaning methods.

**Customer's facility (a semiconductor production plant)**

**7 Start-up and inspection**

The equipment is started up in the customer's plant. It is essential to follow procedures – our motto is "Safety first" – when handling the dangerous substances used in this equipment. Several pieces of equipment are brought into the customer's plant. Sometimes, start-up must be carried out on a 24-hour time schedule, with teams trading shifts, as necessary.



**8 Production of semiconductors**

Semiconductor production equipment is operated 24 hours a day for the constant production of semiconductors. Customers allow only brief stops of the equipment for maintenance, so it must be possible to perform all maintenance work properly in a very limited time. We are also keenly aware that, according to life cycle assessment, a great portion of the total environmental burden of our equipment occurs during semiconductor production. Reducing that burden is a top priority.

# EHS Management

TEL's environmental, health and safety initiatives have spread across the globe.

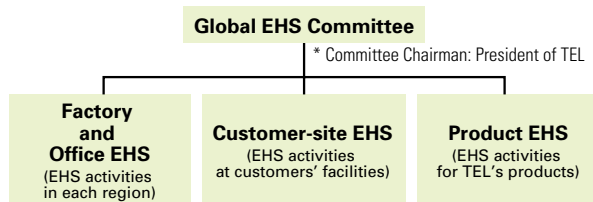
## EHS Activities for Improving the Environment, Health and Safety

TEL is firmly aware how important it is to undertake strong and continuous environmental, health and safety (EHS) initiatives, and the entire group is constantly conducting such activities. Our Management Philosophy emphasizes these topics in the following sentences: "The TEL Group places the highest consideration on the global environment, as well as the safety and health of its employees, customers and every person connected, directly or indirectly, with our business activities. We believe that keeping safety, health and the environment foremost in our thoughts will build trust in our business and result in long-term profit growth for the company."

## EHS Promotion System

Our EHS system takes the form of three pillars: "Product EHS," which advances EHS priorities in our products in general; "Customer-site EHS," which advances those priorities during and after start-up of our products; and "Factory and Office EHS," which concerns TEL's facilities.

## TEL's EHS Promotion System



## EHS Management System

TEL is pursuing certification under ISO 14001 at all our plants. In FY 2005, one each of our manufacturing plants and offices acquired certification.

### ISO 14001-qualified plants and offices

Company name	Plant/office name	Certification date	Certification number
Tokyo Electron AT Ltd. Tokyo Electron FE Ltd.	Sagami plant	December 10, 1997	1110-1997-AE-KOB-RvA
	Tohoku plant	February 19, 1998	1118-1998-AE-KOB-RvA
Tokyo Electron AT Ltd.	Yamanashi plants (Fujii/Hosaka area)	May 15, 1998	1124-1998-AE-KOB-RvA Rev.1
	Miyagi plant	March 1, 2005	01245-2005-AE-KOB-RvA
Tokyo Electron Kyushu Ltd.	Saga plant	March 12, 1998	1119-1998-AE-KOB-RvA
	Kumamoto/Koshi/Ozu plants	March 26, 1998	1120-1998-AE-KOB-RvA Rev.1
Tokyo Electron Device Ltd.	Yokohama office	July 14, 2004	EC04J0144

## EHS Activities Monitoring System

In order to strengthen our EHS management system, we are increasing the monitoring that verifies the system function and results. Monitoring is done within plants and offices, within the Group, or by third parties. We are especially focusing on the TEL Internal Assessment, a program of mutual EHS evaluations by representatives of many plants and offices, which was instituted in FY 2003. In FY 2005, the three topics of Product EHS Compliance, Product EHS Performance, and Environmental Performance and Legal Compliance were added to the earlier programs, which focused on labor safety and health. These measures have reinforced our ability to check the environmental and safety performance of individual pieces of equipment as well as to allow plants to check each other's environmental management.



On-site assessment

## Environmental Risk Management

All our plants use the Plan → Do → Check → Action (PDCA) cycle for product improvements. This cycle is mandated under the ISO 14001 standard for reducing environmental burden. Estimates of risks to the environment are also determined in accordance with this system and measures are taken for designs which have especially serious environmental burden. There are some issues which we are addressing in advance of environmental law. We believe that taking action on global warming in accordance with the Kyoto Protocol is the most important issue for the near future.

## Abiding by the Law

TEL operates in strict obedience to the law. We closely track new environmental laws and emissions regulations and for some substances have enacted independent standards that are stricter than legally required. In FY 2005, we were not subject to legal actions of any kind with regard to environmental accidents, violations, fines or complaints.

# EHS Activity Goals and Results

TEL has set goals for EHS activities and is promoting those activities throughout the group.

## Goals and results for EHS activities in FY 2005

	Action plan in FY 2005	Results	Evaluation	Plans and goals for FY 2006 onward	Page in report
Product initiatives for the environment	Perform life cycle assessments	Performed for newly-developed equipment	○	Continue to perform	P18
	Implement lead-free solder in products	Identified issues in customer's plants, prepared investigations for technical standards, etc.	○	Address issues, prepare for start of production in January 2006	P20
	Green procurement	Surveyed components at suppliers for hazardous substances in accordance with guidelines on substances banned or subject to reduction in products and with JGPSSI* survey	○	Construct system enabling creation of component database with survey results and use of the database during component searches or ordering	P21
Environmental activities at each plant or office	Reduce energy consumption (1% decrease in CO <sub>2</sub> emissions per unit of sales, as based on Law Concerning the Rational Use of Energy)	Actual CO <sub>2</sub> emissions increased, but fell 12% per unit of sales since previous year	○	Continue to promote energy conservation and aim to get closer to 1997 level of energy consumption per unit of sales	P22
	Zero emissions	Accomplished at four plants in Kyushu region and in Yamanashi, Tohoku, Miyagi and Amagasaki; recycling rate for the entire group raised to 96%	◎	Promote zero emissions and waste reduction programs in regions other than manufacturing plants	P23
	Continue tracking the amount of chemicals used that are subject to PRTR reporting	Determined amounts of relevant substances used, identified where they are emitted to, and tracking for the group overall from this fiscal year	○	Continue surveys	P25
Health and safety	No accidents requiring 4 or more days off; 30% reduction in injury accidents from previous fiscal year	Some accidents required employees to take 4 or more days off; there were increases both in rate and absolute number of injury accidents over previous year	×	For FY 2006, set goals for accidents requiring emergency measures, office accidents, ergonomically caused accidents, etc. and work to reduce them	P26,27
EHS management	Continue TEL Eco-Activities (simple EMS) at office facilities	Acquired ISO 14001 certification at Tokyo Electron Device Yokohama office	○	Examine introduction of web-based environmental training	P12,29
	Introduce occupational safety and health management systems in manufacturing plants	Promoted risk assessments at plants where they had not been introduced yet	○	Execute meaningful risk reduction plans, verify their effects	-
	EHS mutual assessments	Added and performed checks addressing environmental performance and product EHS to the existing EHS mutual assessment procedures for work safety	○	Perform assessment in each region using assessment methods to which new elements have been added	P12
	Promote activities at overseas offices	Began tracking state of safety training in Asia via the web	○	Investigate how environmental training is conducted; introduce into new regions; track state of training via the web	P29

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

\* JGPSSI: Japan Green Procurement Survey Standardization Initiative

### Safety and the environment: critical considerations in the development stage

This section summarizes safety and environmental initiatives in the year ended March 2005 from the viewpoint of managers in the field.

In the realm of safety, TEL has reviewed the safety of each type of production equipment it provides. TEL has been designing and developing its production equipment based on the safety standards promulgated by SEMI\*, among other sources, but the latest review also considered safety during start-up, maintenance and other times when the equipment is not actually running. Another item considered was the importance of reducing equipment weight in order to lessen the physical burden imposed during start-up and maintenance. Although this objective is in direct conflict with the recent trends to larger sizes and weights of semiconductor production equipment, TEL is emphasizing ergonomic engineering in its design in order to reconcile these opposing goals.

As for the environment, customers are increasingly requiring that we reduce not just equipment voltage but overall environmental burden. TEL is aware that the environmental burden of our products is greatest during equipment operation, and we are working to mitigate this burden by starting at the design and development stage.



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

### As the awareness of product standardization has grown, we have created a foundation for building in eco-friendliness and reducing the physical burden to workers.

Until recently, TEL's approach to each customer's order was to create a completely new design meeting the customer's needs in his order for semiconductor and FPD production equipment. Now, however, we have begun to promote standardization. Our designs employ common platforms, and a variety of modules are assembled onto the platforms. It is essential to standardize equipment in order to further the goals of production equipment safety and protection of the environment, so we see our current efforts as simply preparation for reaching further objectives. There is plenty of room for further standardization. This process will be continued for equipment, designs and components.

Meanwhile, we are tackling another issue, that of cutting employees overtime. One example of this is that whereas extra workloads once fell on a certain few departments or employees, now, as the spirit of "kaizen" spreads from the management to employees, there is much more equality in the sharing of the workload.



**Hirofumi Kitayama**  
President and  
Representative Director  
Tokyo Electron AT Limited

\* SEMI: Semiconductor Equipment and Materials International: An international industry group consisting of manufacturers of semiconductor and FPD production equipment and materials

# Environmental Accounting

TEL uses environmental accounting in its business management to determine the costs and benefits of its environmental activities.

## Our Approach to Environmental Accounting

Environmental accounting is a management tool used to find the costs and benefits of a company's environmental activities. TEL has implemented an environmental accounting system to quantify the costs of its activities that concern environmental protection.

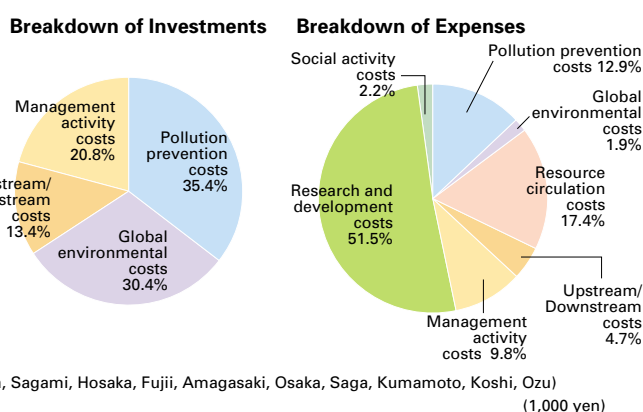
In FY 2005, the sixth year since the introduction of our environmental accounting system, we worked to further improve the accuracy of our data on investments and expenses for equipment needed for environmental activities. We are determined to continue initiatives to preserve the Earth's environment in the years to come.

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

## Environmental Preservation Costs

Environmental preservation costs (investments and expenses) for FY 2005 are outlined in the tables and figures below.

The scope of coverage of the data includes TEL plants and offices in Japan. The investment depreciations in facilities are calculated as expenses beginning with the investments made in FY 2000.



## Environmental Protection Costs in FY 2005

Scope: All TEL facilities in Japan (Sapporo, Tohoku, Miyagi, Akasaka, Fuchu, Yokohama, Sagami, Hosaka, Fujii, Amagasaki, Osaka, Saga, Kumamoto, Koshi, Ozu)  
 Period covered: April 1, 2004 — March 31, 2005

Classifications of environmental costs	Scope of main initiatives (facilities, supplies, leases, depreciation, maintenance, etc.)	Investment amount	Expense amount
1. Business area costs		56,218	656,769
Itemization			
1.1 Pollution prevention costs	Preventing air pollution, water pollution, soil pollution, etc.	30,259	264,232
1.2 Global environmental costs	Global warming prevention, ozone layer protection, etc.	25,959	37,851
1.3 Resource circulation costs	Efficient use of resources, waste reduction, etc.	0	354,686
2. Upstream/Downstream costs	Green purchasing, green procurement, etc.	11,439	96,436
3. Management activity costs	Environmental education, monitoring and measuring environmental impacts, etc.	17,801	200,506
4. Research and development costs	Product R&D, etc.	0	1,042,573
5. Social activity costs	Planting trees and vegetation, supporting local environmental activities, information disclosure, etc.	0	44,332
6. Environmental damage costs	Repairing damage to the natural environment, etc.	0	0
7. Other costs	Other	0	0
<b>Total</b>		<b>85,458</b>	<b>2,040,616</b>

## Economic Benefits of Environment Protection Activities

The results of calculations for the economic benefits of environmental protection activities are shown in the table below. The economic benefits of environmental protection activities are the only environmental accounting items covered in this report.

## Economic Benefits of Environmental Protection Activities in FY 2005

Scope: TEL facilities in Japan (Sapporo, Tohoku, Miyagi, Akasaka, Fuchu, Yokohama, Sagami, Hosaka, Fujii, Osaka, Amagasaki, Saga, Kumamoto, Koshi, Ozu)  
 Period covered: April 1, 2004 — March 31, 2005

Classifications of environmental costs	Details	Amount	
Cost reduction	Benefits relating to electricity and other energy	Reduced electricity usage	△ 40,796
	Water-related benefits	Reduced water usage	7,478
	Paper-related benefits	Reduced paper usage	3,990
	Resource-related benefits	Reduced crude oil usage	1,516
	Other benefits		7,594
	Waste related benefits	Reduced waste volume	14,513
	Water and soil effluent benefits	Reduced waste volume	132
Cost reduction subtotal		△ 5,573	
Profits	Resource-related benefits	87	
	Waste-related benefits	495	
Profit subtotal		582	
Grand total		△ 4,991	

# Our Approach to Reducing CO<sub>2</sub> Emissions in the Semiconductor Industry

**Global warming poses serious problems to the continued existence of human life on Earth. TEL will respond more strongly to this issue and work for reductions in our CO<sub>2</sub> emissions as our contribution to the solution of this problem by the semiconductor industry.**

## Issues in the Semiconductor Industry

The CO<sub>2</sub> emissions by the Japanese electric and electronic products industry accounts for about 3% of all industrial emissions (see graph "Emissions Industries in Japan"). The structure of this industry has greatly changed in the past 10 years: manufacturing has moved away from heavy electric equipment and home electric appliances, which consume relatively low amounts of energy and involve much assembly of components, to products requiring high-precision processes. The sector of semiconductor device production is a heavy energy consumer and has gone through a period of exceptional growth, during which many new production facilities have been built. The energy consumption far outstrips the preliminary estimates (based on an excerpt from a Nippon Keidanren report on measures against global warming). It is predicted that CO<sub>2</sub> emissions involved with production of semiconductors, liquid crystal displays and plasma displays will increase, raising emissions for the industry as a whole.

In the wake of the Kyoto Protocol, Nippon Keidanren has published an environmental action plan. They proposed the goal of a 25% reduction by CY 2010 in production-caused CO<sub>2</sub> emissions per unit cost, relative to the CY 1990 level, for the four groups of electric and electronic groups, which include the semiconductor industry. One of the measures suggested is to reduce energy consumption in large-scale clean rooms where semiconductors are produced.

Meanwhile, semiconductor industry groups in the EU, Japan, South Korea, the U.S. and Taiwan have announced through the World Semiconductor Conference (WSC) that they will reduce emissions of the greenhouse gases PFCs\* by 10% by CY 2010.

As such domestic and international efforts get further underway, our customers are also stepping up initiatives, meaning that they also expect more from TEL.

\* PFCs: Perfluorocarbons. Gases belonging to this category are used in semiconductor production processes, for silicon wafer etching and for cleaning the chambers of film forming equipment.

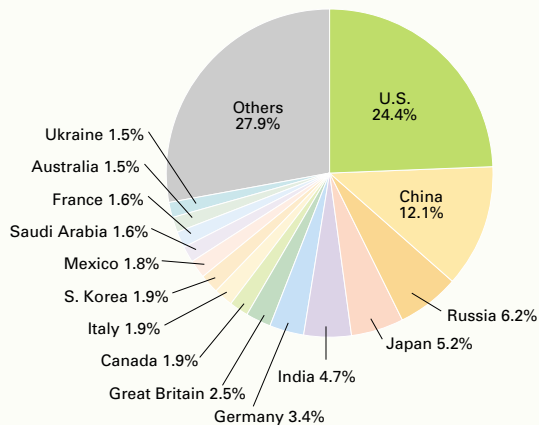
## Approaches Taken by TEL

A close look at the life cycle of our semiconductor production equipment reveals that its environmental burden, especially as measured by CO<sub>2</sub> emissions, is high during operation (see P.18). Thus, reducing emissions during operation is the main thrust of our efforts.

The electric power consumption of production facilities (lines) doubled as wafers were upsized from 200mm to 300mm. Some tentative forecasts have even warned that the growth of energy demand from that sector exceeds the

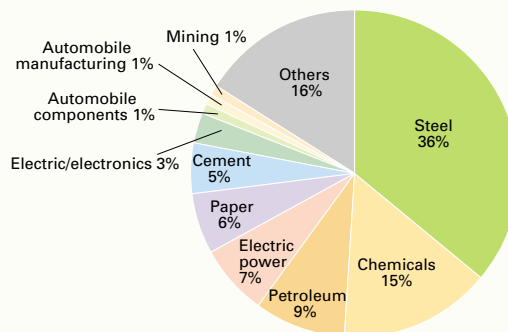
growth in power available from electrical generation facilities. The industry has tackled the problem of improving equipment efficiency in order to reduce energy consumption, but the big gains have already been made, and no great progress in that realm can be realistically expected in the future. Hereafter, it will be necessary to pursue energy savings throughout the factory from a variety of viewpoints – not only equipment, but also in methods of accomplishing tasks and by sharing technical information. New efficiency programs must encompass devices, equipment and facilities. All the departments of TEL – development, design, manufacturing and management – will pull together as a team to develop new environmental technology for our equipment.

**Percentage of Total World Carbon Dioxide Emissions Due to Top 15 Nations (CY 2000)**



Source: Oak Ridge National Laboratory  
Quoted from Japan Center for Climate Change Actions (JCCCA)  
<http://www.jccca.org>

**Emissions of Industries in Japan (FY 2003)**



Source: Ministry of Economy, Trade and Industry



## Sales, Development and Design Staff Share Their Views

TEL employees involved with our TPS (thermal processing system) equipment, one of TEL's main products, met recently to discuss how to make this equipment kinder to the environment, a goal which includes energy conservation.

### More Customers Looking for Eco-friendly Equipment

**Hoshi:** I believe that the biggest challenge TEL is facing now is the environmental burden of our equipment during operation, especially its high energy consumption. I look forward to hearing your opinions today about how we can address these environmental considerations, mainly with respect to energy savings.

**Okabe:** I am in charge of development of elemental technology. We are the first part of the organization for the process of turning a basic component into a product, so



you could say that we have to be the first to think about the environmental impact. Specifically, we have challenges like creating systems for re-using expensive or rare gases.

**Wamura:** I am in charge of design for mass production, so I mainly deal with

customer needs like faster production schedules or cost savings. Still, I think it is important to make a real effort to communicate environmental concerns to the sales staff and to the customers, and make sure they understand.

**Yasuhara:** I am in a project for product quality management and assurance as part of our sales activities. The perception of quality has changed over the years; recently, getting the product to have less environmental burden has



come to be seen as one aspect of quality. For example, customers see the effect of equipment on the environment while it is operating, and the burden of the equipment on the environment after use, as an integral part of "quality."

**Umeki:** There really is a trend to that. We have heard a lot about this from customers, that they don't just want functionality in the equipment, they also want us to reduce their energy consumption. They told us that one strategy



for reducing energy usage would be to shorten the time from wafer input to output as much as possible. We developed equipment which did that, and it did reduce power consumption for wafer handling. Still, a survey by one of the semiconductor producers showed that, of all the systems used by semiconductor producers, TEL's TPS equipment had the highest power consumption. For our products to benefit the public, I really feel we are going to have to put more effort into reducing our equipment's energy usage.

**Wamura:** That's right. We need to increase the value of our products by taking more consideration of environmental concerns. I think that is the responsibility for us in the design department.



**Umeki:** Also, more and more requests from customers address not just the equipment itself, but also the associated facilities, material gases and wafer treatment methods. We may have a business opportunity here, with "environment" as the keyword.



**Joji Hoshi** Environment, Health & Safety Center  
Tokyo Electron Limited.

**Yu Wamura** TPS Engineering Dept.  
Tokyo Electron AT Ltd.

**Masaaki Chiba** TPS Engineering Dept.  
Tokyo Electron AT Ltd.

**Moyuru Yasuhara** TPS Dept.  
Tokyo Electron Limited

**Tsuneyuki Okabe** TPS Development Dept.  
Tokyo Electron AT Ltd.

**Makoto Umeki** TPS Engineering Dept.  
Tokyo Electron AT Ltd.

(photos at top of p. 16, from left)

### Advancing Product Eco-friendliness by Proactive Marketing

**Chiba:** I'm in charge of making TEL products lead-free. We're running a program with the goal of removing all the lead from our products as of 2006. The problem however is that this raises costs, so we are really struggling to do this and meet our other goal, lowering costs, at the same time.



**Yasuhara:** Is it possible that you will be able to get past that by changing your approach? When you decrease the energy usage of the equipment, even if the product's price goes up, the energy expense during operation goes down, so it is quite possible that you have lowered the overall costs. Eliminating lead works the same way. The higher costs in the initial investment stage can be recovered in the long run. I feel it is the essential role of the sales force to do a good job explaining this to the customers and convince them it is worthwhile.

**Wamura:** In order to better differentiate ourselves from our competitors in environmental issues, we need to be more aggressive in trying things that other companies are not looking at yet.

**Okabe:** I think, in order to do that, the company as a whole needs to put out directives or slogans for attacking the necessary issues, like safety during development of eco-friendly products. They should not just follow the current lines of research. They will need a specialized structure for developing such products.

**Yasuhara:** Up to now, we've always developed our products in accordance with our customers' requests. But that is changing. We are overhauling the way we develop our products, with an emphasis on preserving the environment. I think it is completely appropriate for TEL to change over to a kind of manufacturing that we can be proud to describe to our customers.

**Hoshi:** I really support the proactive style of business, which reflects TEL's attitude toward the environment, and I support a continuing emphasis on environment-friendliness. We are not waiting for our customers to ask, we are making these changes on the basis of our own ideas. This is a good thing.



**Meeting time:** 1:00 – 3:30 PM, Thursday, June 30, 2005  
**Place:** Headquarters Conference Room, Tokyo Electron Limited

#### In response to the exchange of opinions

This was a conversation among members involved in our TPS equipment, but as I listened to the lively discussion, I felt the members were looking more at our industry than just at our equipment.

There was some discussion of reducing environmental burden, mainly by reducing energy consumption of the equipment, and I felt that every one of the members had a direct sense of how many human and financial resources the entire semiconductor industry is devoting to the environment. I must also note that everyone seems to share a consciousness that the business is changing from the old model of manufacturing according to the

requests of semiconductor producers to a model whose technology is led by the equipment makers, on the basis of the knowledge and skills they have built up, and a model that is responsive to environmental concerns.

The Development and Marketing divisions of TEL have been cooperating closely in studies to reinforce environmental concerns at the design stage since 2004.

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

# Product-related Initiatives for the Environment

TEL's efforts to reduce the environmental burden of our products use a variety of approaches, including life cycle assessment (LCA) and lowering the power requirements of clean rooms.

## Reducing the Environmental Burden of Products

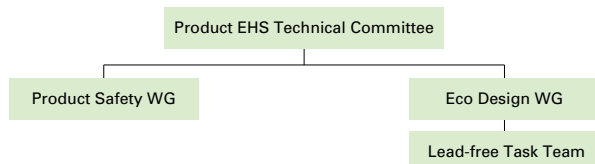
TEL has examined the life cycle environmental burden imposed by the products we manufacture and sell. The life cycle includes the manufacture of our products, their operation and disposal. We determined that operation is the stage at which our equipment has the most severe environmental burden. Therefore, we are giving highest priority to reducing the burden at that stage and are pursuing several avenues for accomplishing that. In addition to the effort to eliminate toxic substances from the raw materials we use, we are approaching the goal of environment-friendliness from every possible angle, including reduction of energy consumption throughout our customers' clean rooms.

## Organizations for Reducing Environmental Burden

TEL has established an Eco Design Working Group (WG) under the Product EHS Technical Committee to pursue the reduction of environmental burden as measured by lower energy consumption and lower resource usage. Each of our Business Units (BU) and divisions has compiled LCA data on the new products. The pictures they have developed of those products are quite instructive and will help to direct programs to improve those products and the course of development of our next generation of products. We have also instituted a task team to direct our reduction of lead content. They have been charged with the goal of a completely lead-free product line in 2006. We have also notified our suppliers of specific targets for green procurement, in order to decrease the environmental burden of our raw materials.

Requests from customers for better performance in the environmental, health and safety fields have grown in recent years. It is more and more important to incorporate the concepts of EHS in the initial stages of development and design of each product. This is called "Design for EHS." The globalization of our business activities is also driving us to adapt our products to the requirements of different countries' laws and regulations. We will continue our proactive Design for EHS initiative in order to meet this challenge.

### Organization for Promoting Product EHS



## Efforts in LCA

As part of our activities to reduce environmental burden, TEL employs LCA to make an objective assessment of that burden imposed by our equipment. The LCA data we have amassed for our products and ways in which we have applied the data in design have elevated TEL to the role of a leader in LCA in our industry.

### Example of LCA

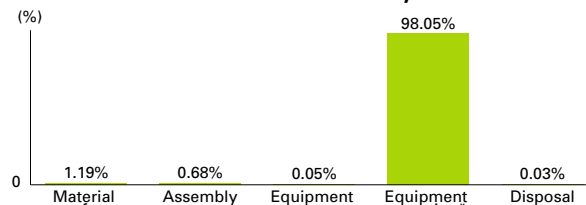
An LCA of one of our main products, the Telius™ plasma etch system, showed that 98% of the total CO<sub>2</sub> released during the life of the equipment was generated during equipment operation. The operation stage also accounts for about 50% of its total gas emissions and 30% of total energy usage. Subsequently, it was found that replacing the conventional etching gas with one of a lower global warming coefficient, would reduce CO<sub>2</sub> emissions by 70% from the original volume. Nevertheless, the substitute etching gas is both toxic and flammable. Besides the dangers it poses during use, it must be detoxified, which increases costs, and special precautions must be taken in handling it.

\* Plasma Etch System: This uses a plasma to etch (remove) a thin film from the surface of the wafer, following the pattern of the desired circuit.



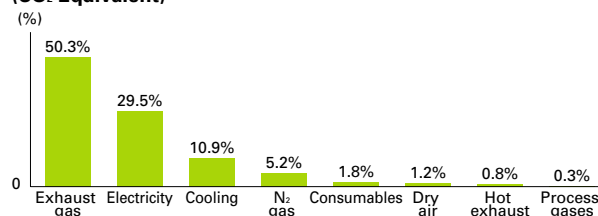
Telius

### Distribution of CO<sub>2</sub> Emissions as Found by LCA



\* Operating life assumed to be 10 years

### Details of Environmental Burden during Operation (CO<sub>2</sub> Equivalent)

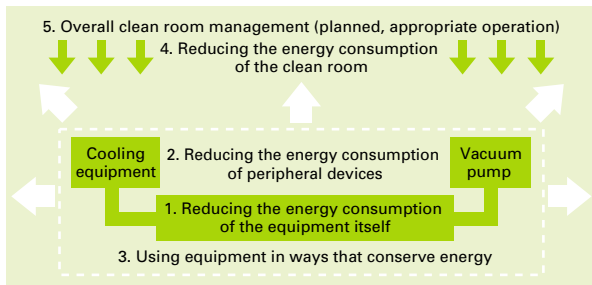


### Approach to Reducing Energy Consumption during Operation- Initiatives in the Clean Room -

Reducing the energy consumed during operation of our equipment is one of the most important issues facing TEL. It is also important for our customers and for the entire industry, with the Kyoto Protocol in force as of February 2005.

TEL sees five strategies for reducing energy consumption during equipment operation: (1) Reducing the energy consumption of the equipment itself, (2) reducing the energy consumption of peripheral devices, (3) using equipment in ways that conserve energy, (4) reducing the energy consumption of the clean room, and (5) overall clean room management (planned, appropriate operation). These strategies will be reflected in future technological development. In addition, cooperating with customers and equipment makers is absolutely essential in order to realize clean rooms that operate with better energy efficiency, and therefore TEL looks forward to cultivating close three-way ties to roll back energy consumption during equipment use.

#### Approach to Reducing Energy Consumption during Operation



### Example of Energy-conserving Operation of Semiconductor Production Equipment

Energy consumption by the semiconductor production equipment manufactured and sold by TEL can be lessened by shortening the cycle times\*<sup>1</sup>. Let us take the ALPHA(α)-8SE thermal processing system\*<sup>2</sup> for example. We set a goal of a 20% reduction in cycle time between 1997 and 2002. The time required in 1997 was 279 minutes (for a standard 150 nm process of dichlorosilane-SiN); after many improvements, this was lowered to 165 minutes in 2002, a considerable reduction. The actual improvements are listed below.

\*<sup>1</sup> Cycle time: The time required to treat a wafer

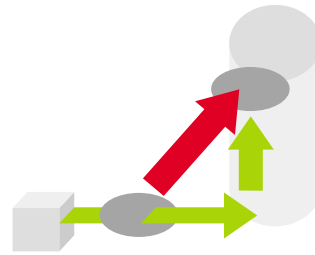
\*<sup>2</sup> Thermal processing system: A system which produces oxidized layers, nitrided layers, etc. on a wafer



ALPHA(α)-8SE

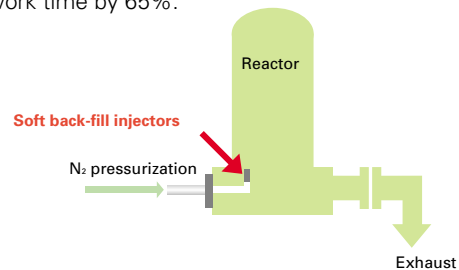
### Speeding up the wafer transfer

The mechanism, which used to move in the horizontal and vertical directions independently, was re-designed, resulting in a 15% reduction in wafer transport time.



### Faster re-pressurizing to ambient pressure

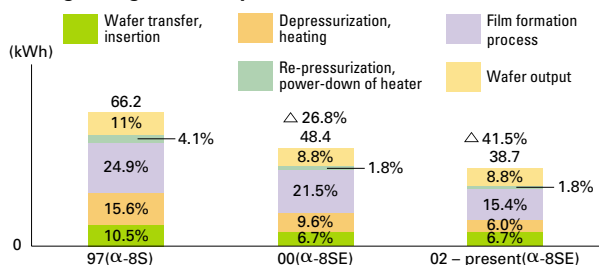
Formerly, the de-pressurized interior of the reactor was returned to ordinary atmospheric pressure by injection of nitrogen over a relatively long time, in order to minimize travel of particles (specks of dust and wastes). Recently, however, we have installed soft back-fill injectors (nozzles with multiple holes), which allow rapid pressurization with nitrogen without picking up particles. This has shortened work time by 65%.



### Reducing the electricity consumed by reducing cycle times

In addition to the techniques mentioned above, we have upgraded control of the heaters. The energy consumed for a single cycle has been reduced 41% from the 1997 level. These technologies are being used in current 300mm wafer processing systems.

#### Progress in Reducing Energy Consumed during a Single Wafer Cycle





## Green Procurement

Examining the burden of the components and raw materials making up the product is an integral part of the effort to reduce the environmental burden of our products. TEL obtains the materials and components for our main products, our semiconductor and FPD production equipment, from outside vendors. In order to reduce our products' environmental burden, therefore, we follow our own Green

Procurement Guideline\* and purchase raw materials and components preferentially from suppliers who are aggressive in reducing their products' environmental burden. In the future, we intend to procure materials only from suppliers who meet certain environmental standards.

\* Green Procurement Guideline: A TEL document setting standards and targets for chemicals, energy conservation, packaging, resource conservation, recycling and information disclosure.

### Green Procurement Action Plan

Theme	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008
Green procurement for equipment and parts					
Supplier surveys and guidance in improving environmental management	Survey/Improvement guidance	Survey/Improvement guidance	Survey/Improvement guidance	Survey/Improvement guidance	Survey/Improvement guidance
Reviewing supplier relationships	Reviewing supplier relationships				
Compose lists of materials prohibited from use in products	List composition				
Collect data and request cooperation on materials prohibited from use in products	Data collection/Establish master parts registration				
Substitute for parts containing prohibited materials	Promote designs that do not use materials prohibited from use in products				

## Clarifying Materials Prohibited or to be Reduced in Products

TEL has formulated Group-wide guidelines banning or reducing amounts of 16 toxic chemicals in our products. In the guidelines published by JGPSSI<sup>\*1</sup>, 15 of the banned chemicals are designated as "Rank A"<sup>\*\*2</sup>. Six are also listed for regulation under the RoHS Directive. In FY 2005 we stepped up green procurement. Part of this effort was a survey based on JGPSSI's survey form which we sent to our suppliers, addressing toxic substances in their raw materials and components. Our policy states that we shall survey new materials and components as they are adopted. We will register the survey results in a central component database shared throughout the Group and construct a system which will allow component searches and show how much of each substance of concern is contained in a component when it is ordered.

\*1 JGPSSI (Japan Green Procurement Survey Standardization Initiative): An association which oversees green procurement initiatives.

\*\*2 Rank A: A group of substances which have been designated as banned, permitted in limited amounts, or whose content must be reported, when used in products, by Japanese or other national or international law.

### Substances Banned from Use in Products

Substances banned in products at TEL (16 substances: JGPSSI Rank A substances + PFOS*)	JGPSSI Guidelines Rank A Substances (15)	RoHS (6)
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\* PFOS: Perfluorooctane sulfonate. This is an intermediate product used as a raw material to synthesize other substances.

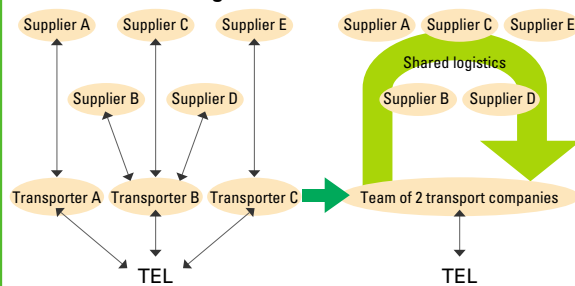
## TOPICS

### Introducing shared logistics

Tokyo Electron Kyushu Ltd.'s coater/developer business has instituted a program to increase efficiency by sharing logistics and has decreased its environmental burden as a result. Its loading efficiency used to be rather low, because it was using different commercial transporters for each supplier, sometimes forcing transporters to wait when there were overlapping ship-out schedules.

Since 1999, the company has been using a new mode of logistics in which two transport companies are combined into a team. One of the companies is designated as the representative, and all transportation duties have been contracted out. The transporters use wide trucks exclusively for shipping TEL products, which eases loading and unloading. Currently, about 30 of our suppliers participate in this logistics system. This has enabled us to establish a just-in-time system, which provides supplies that we need, when we need them, and in exactly the volume that we need.

#### Outline of shared logistics



# Plant and Office Initiatives for the Environment – Preventing Global Warming

TEL has reduced its overall energy consumption and is doing its share to prevent further global warming.

## Reducing Energy Consumption

Many of TEL's manufacturing plants are classified as Type 1 Designated Energy Management Factories under Japan's Law concerning the Rational Use of Energy and are promoting energy conservation in accordance with the provisions of the law.

Each plant is working actively with the program and has established goals for saving energy used by lighting and office machines, for managing air conditioner temperature settings, and so on. They have also instituted full machine shutdowns during three-day weekends and task efficiency drives to achieve further energy savings.

Koshi plant reduces the volume of air circulation in its clean rooms and reduces lighting in logistics areas during the night and days off. It has been praised for its approaches, and in February 2005 was presented with a commendation for its efforts in conserving energy by the Kyushu Bureau of Economy, Trade and Industry (Electrical Division).

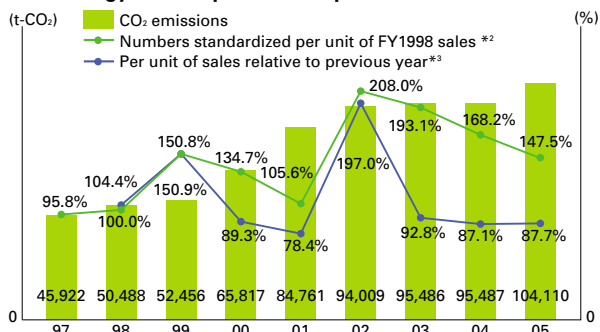


Kyushu Bureau of Economy, Trade and Industry Director's Prize

## Energy Consumption

The utilization rate of TEL's manufacturing facilities rose this year, following the rise the previous year. The total amount of energy consumed rose with the increase in our production, but the energy per unit of sales was reduced. The energy use per unit of sales (a measure in which the benchmark 1997 level is equal to 100%) met the target reduction of 1% from the previous year. Efforts for conserving energy will be strengthened under the impetus of the Kyoto Protocol.

### Total Energy Consumption (CO<sub>2</sub> Equivalent\*)

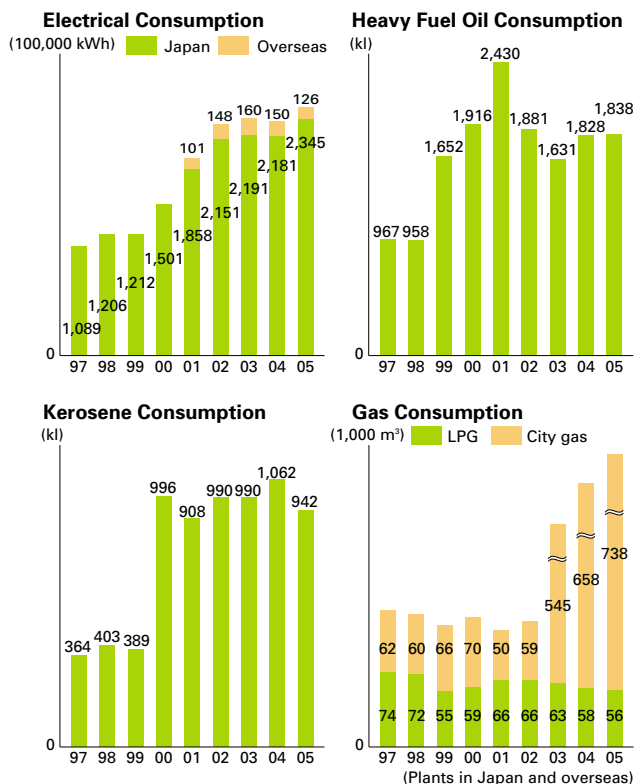


\*1 For CO<sub>2</sub> equivalent, see the Ministry of the Environment's "Environmental Activity Evaluation Program."

\*2 Unit of sales = energy consumption/sales (FY 1998 = 100%)

\*3 Year-on-year ratio = current year emissions per unit of sales/previous year emission per unit of sales

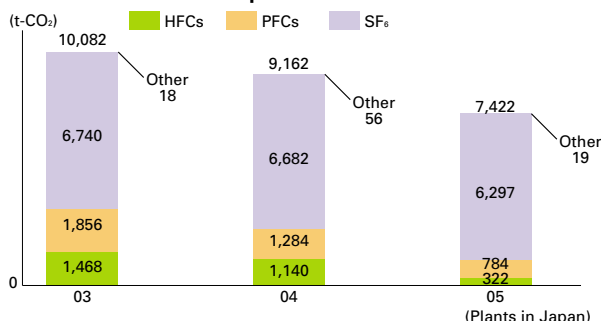
(Plants in Japan and overseas)



## Reducing Use of Greenhouse Gases

TEL uses perfluorocarbons (PFCs) and SF<sub>6</sub> (sulfur hexafluoride), which are greenhouse gases, in dry etching (erosion of a substance without liquid chemicals), washing and other processes during process development and process evaluation. We also use HFCs, which are CFC substitutes, for cleaning the chambers of our assessment equipment and other tasks. Our total usage of greenhouse gases in FY 2005 was about 7,500 tons (CO<sub>2</sub> equivalent). We will continue to manage and reduce our usage of these gases.

### Greenhouse Gas Consumption



(Plants in Japan)

# Plant and Office Initiatives for the Environment – Waste Reduction and Recycling

TEL is working to decrease its volume of wastes and improve recycling efficiency in order to decrease its environmental burden.

## Approach to Waste Reduction and Recycling

The Group is working seriously to reduce wastes, following its policy to generate as few wastes as possible, to recycle as many of those we produce as possible, and to dispose of the non-recyclable remains properly. There are a dwindling number of waste disposal sites, so landfill fees are rising fast. Reducing wastes is an integral part of reducing costs.

Specifically, TEL has programs to separate wastes, to find new recycling services, to manage the certification of members of the waste disposal industry, to verify contractors' disposal methods regularly, and to modify its own production processes to eliminate waste. TEL also puts up easy-to-understand displays in all its plants showing how to separate wastes. It has created and is using training materials in Yamana-shi plant which show how to separate wastes such as paper, PET bottles, drink cans, bottles, etc.

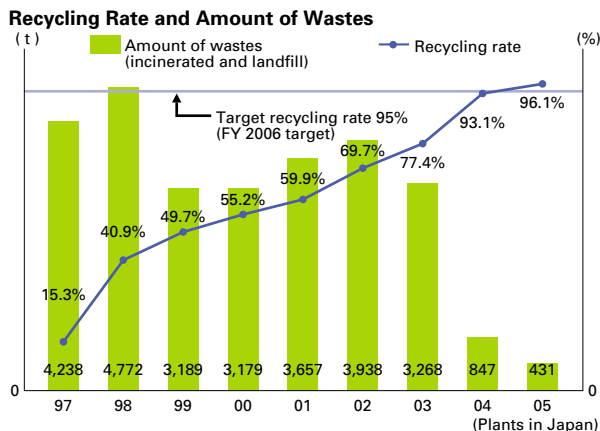


Waste separation procedures information

## Total Waste and Recycling Rate

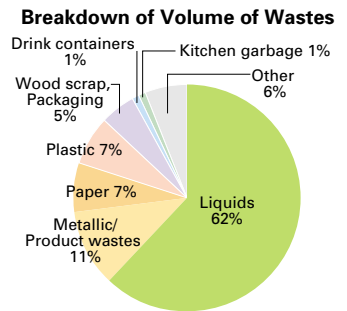
The amount of TEL waste reaching landfills and our recycling rate are summarized in the table below. We have raised our recycling rate every year through steady efforts for more effective use of resources.

We have had a program promoting a goal of an overall TEL group average recycling rate of 95% by FY 2006; in FY 2005 we reached a rate of 96.1%, a year ahead of schedule. In the future, we will emphasize reducing the total amount of wastes, including those we are able to recycle.



## Breakdown of Wastes

Liquid chemicals are the largest portion of the wastes generated by TEL. Chemicals are used in the development and evaluation of products and then disposed of. Currently, nearly all of the liquid wastes we generate and dispose of externally are recycled. Some of our facilities have also implemented equipment internally for processing waste fluids, and these are working to reduce wastes through internal processing of their liquid chemicals.



## Zero Emissions

TEL defines facilities where fewer than 2% of wastes are incinerated or sent to a landfill as "zero-emissions facilities." The entire Group participates in zero-emissions activities. Following up on the successes of the previous year, zero-emission status was achieved by all five facilities of Tokyo Electron AT (Hosaka, Fujii, Miyagi, Tohoku and Amagasaki) in FY 2005. Facilities besides manufacturing plants are also working to reach zero-emissions in the future.

## TOPICS

### Wastes separated into 31 groups for recycling at Tohoku Plant

At Tohoku Plant, wastes from the manufacturing processes and offices are separated into 31 types for recycling. For example, sludge is left after liquids are neutralized; the sludge is then recycled for use as raw material for production of stainless steel. As another example, cable and controllers were once excluded from recycling because they consisted of a mix of plastic and steel, but now they can be recycled. Methods have been established for re-using every one of our waste materials.

#### Examples of Recycled Wastes

Material type (Steel · Stainless steel Aluminum · Drink containers)	→	Material type (Steel · Stainless steel Aluminum · Drink containers)
Copy paper Vending machine cups	→	Toilet paper
Cardboard boxes	→	Cardboard boxes
Sludge from dining room waste	→	Organic fertilizer
Toner cartridges	→	Toner cartridges
Waste fluids	→	Release into river after neutralization Feedstock for stainless steel from neutralization sludge

# Plant and Office Initiatives for the Environment – Resource Conservation

TEL is encouraging reductions in the amount of resources used.

## Our Approach to Resource Conservation

We are keeping our use of resources to the lowest possible volume with a procurement program that emphasizes respect for the environment. We are reducing the amount of copy paper and stationery purchased and used, buying eco-friendly products and collaborating with manufacturers to recover products that have reached the end of their useful life.

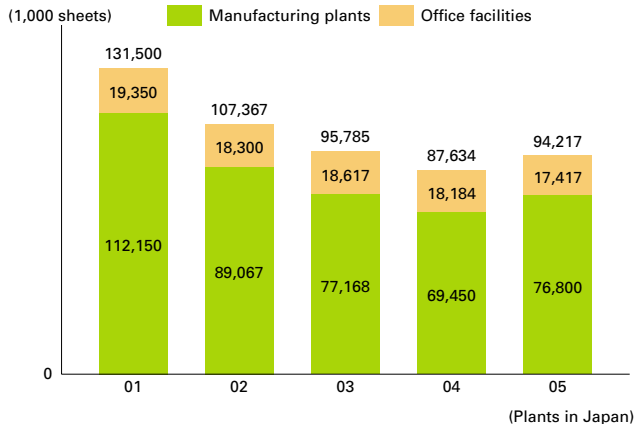
## Efforts to Reduce Paper Usage

TEL is addressing the issue of reducing usage of paper. For example, now we photocopy on both sides of paper, encourage reduced-size copies and have developed digitalized forms for many kinds of announcements and messages. We are taking other steps to preserve forest resources as well; for example, we use recycled paper for all but special uses, and paper cups made from kenaf, a non-forest product. In spite of those efforts, however, our use of copy paper in FY 2005 rose by about 10% (6,580,000 sheets) over the previous year. The main reasons for this were the increases in sales and shipments. We will continue reviewing the usage of copy paper in our facilities, to consolidate records and forms, and ultimately, to reduce our paper consumption.



Poster urging our employees to use less paper

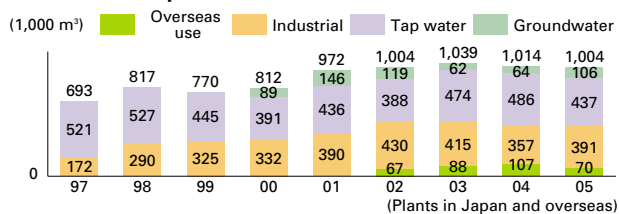
## Copy Paper Consumption



## Reducing Water Consumption

TEL's manufacturing plants are conducting a wide spectrum of activities to reduce the volume of water they consume. We are taking other measures to conserve water with systems to recirculate cooling water and other fluids in all our manufacturing processes, and automatic faucets in washrooms and other sanitation facilities to eliminate water wasted by users' forgetting to turn it off or other carelessness. TEL has been praised for its initiatives. Koshi plant was awarded a prize for its conservation of water in the Higo area (see "Communication with Stakeholders," p. 30).

## Water Consumption



## TOPICS

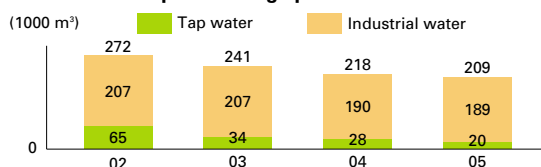
### Reducing water consumption at Saga plant

Saga plant is making great efforts to reduce water consumption during development, evaluation and inspections of products. About 90% of its water consumption is for industrial purposes. It produces the highly pure water it needs for product inspections from the regular industrial water supply. Used water is recovered and subjected to reverse osmosis to re-purify it for re-use; this volume is about 300 tons/day. The plant is pursuing other water conservation projects, including recirculation of cooling water in manufacturing processes, replacing water-cooled vacuum pumps with air-cooled models, and comprehensive conservation of water for personal use.



Reverse osmosis system for recovering water

### Water consumption at Saga plant



# Plant and Office Initiatives for the Environment – Management of Chemicals

TEL is working to prevent environmental pollution before it happens by expanding its chemical substance management.

## Our Approach to Chemical Substance Management

The main use of chemicals at TEL occurs in two stages: in the evaluation of our products' performance during development and in inspection and evaluation during manufacture. During the development stage, chemicals are occasionally used which have never been used before, or in ways in which they have never been used. Before such new uses, the system is built to verify the new substances or methods. The risks to the environment and to industrial safety are assessed so that the necessary measures can be taken before the actual applications begin. TEL is changing over to chemicals which pose as little danger or toxicity as possible for use in inspection and evaluation during manufacture.

## TEL's Response to the PRTR\* Law

TEL is continuing its programs to reinforce management of all chemicals in accordance with the law and has achieved a better grasp of the amounts which it handles and which it sends out for disposal. Hydrogen fluoride, one of the substances designated in the PRTR Law which we use in high volume, is generally used for cleaning test wafers. Used hydrogen fluoride is removed by specialist contractors or handled appropriately within the company. In the same way, we also use large amounts of ethylene glycol as a heat-transfer medium for cooling water, but nearly all the ethylene glycol is recycled after use. We will continue to exercise the appropriate level of risk management of chemicals. Since the amounts we use are increasing, we will also be looking for ways to reduce our consumption.

\* PRTR (Pollutant Release and Transfer Register): 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.

Amounts of PRTR Law Class 1 Chemicals (kg)

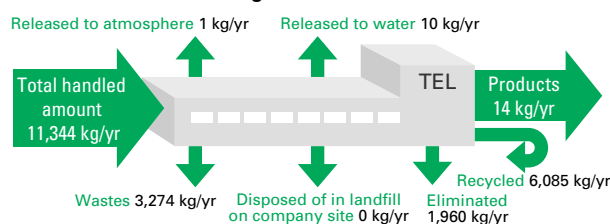
No. in the law	Name of Class 1 Designated Chemical	FY 2002	FY 2003	FY 2004	FY 2005
1	Water-soluble zinc compounds	0	50	0	70
3	Acrylic acid	0	0	0	20
16	2-Aminoethanol	520	430	0	475
43	Ethylene glycol	1,500	4,000	9,144	6,353
44	Ethylene glycol monomethyl ether	120	0	0	0
63	Xylene	180	0	0	0
78	Diphenylmethane-4,4'-diisocyanate	0	0	0	14
172	N,N-dimethylformamide	290	450	309	131
207	Water-soluble copper salts (except complex salts)	190	120	0	110
227	Toluene	620	0	0	5
260	Pyrocatechol	0	30	0	3
283	Hydrogen fluoride and its water-soluble salts	2,470	3,690	4,558	3,553
311	Manganese and its compounds	0	900	450	610
Sum		5,890	9,670	14,461	11,344

\* Quantities were found in tons in FY 2002, 2003 (Plants in Japan)

Emissions of Class 1 Designated Chemicals under PRTR Law (kg)

Emission points	Amount
Released	11
Transferred	3,274
Consumed	14
Eliminated	1,960
Recycled	6,085
Sum	11,344

Balance of Materials Designated under PRTR Law



## PCB Storage

TEL reports how much polychlorinated biphenyl (PCB) we are storing and how much we have disposed of to the local government every year, in accordance with the Law Concerning Special Measures against PCB Waste. The PCB-containing equipment TEL is currently storing consists of two transformers and four condensers; they are in very secure storage.

## TOPICS

### Management of chemicals in Yamanashi plant

TEL has a program which tracks chemical substances before use, during use and after disposal at our Yamanashi plant (Fujii and Hosaka facilities). We carry out a risk assessment before we commit to incorporating a new substance in our processes. We have established our own list of 16 banned substances (nine organic chlorine solvents and seven heavy metals). An MSDS\* is posted on location while any chemical is in use, and tasks are restricted to approved personnel when designated substances are being used. The destinations are fully informed of the contents of materials to be disposed of so that they can be properly treated. The Hosaka plant monitors the fluorine concentration of its waste water and has a complete system to maintain it within legal levels.

\* MSDS (Material Safety Data Sheet) : A form with warnings about the toxicity of a chemical material and instructions on how to handle it safely.



Management of fluorine concentration in waste water

# Health and Safety

Health and safety are corporate social responsibilities and the basis for a comfortable work environment. TEL is supporting health and safety in every aspect of our corporate activities by giving high priority to the health of our employees and customers, and ensuring the safety of our equipment.

## For Everyone's Safety

TEL believes that health and safety are essential and our Management Philosophy and directives cleave to this principle. It is one of our corporate social responsibilities to see that everyone involved with the company, beyond its direct employees and customers, is able to work with or otherwise use its products without fears for their health or safety. This makes for good business. In other words, the safety of people, equipment and facilities must never be compromised by profits, delivery deadlines or time limitations.

We have published and distributed brochures titled "Introducing Safety First Culture Awareness" and "Our Approach to Safety First" and hope that our customers and other stakeholders will understand our approaches and efforts on this issue. (See "Topics.")



"Introducing Safety First Culture Awareness"



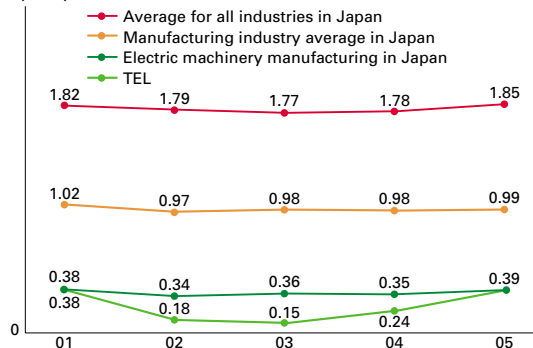
"Our Approach to Safety First"

## Management of Injury Accidents

The rate of occupational accidents at TEL increased from FY 2004 to 2005. Our analysis showed that, as the amount of work increased with our production levels, the severity of occupational accidents and the number of factors involved in accidents increased. We have recently been promoting measures against accidents involving musculoskeletal disorders (such as ruptured disks), since ergonomic factors are of greater and greater importance now. The reason for taking more measures against accidents involving musculoskeletal disorders is, as an equipment maker, we know that these will pay off in terms of improved safety during equipment design, work methods, task management and other realms.

### Rate of Occupational Accidents

(Frequency)



\* Frequency: Number of occupational accidents per one million labor hours  
 Number of accidents that required the employee to miss work for 4 days or more/total labor hours×1,000,000

## TOPICS

### Creating "Our Approach to Safety First"

Generally, TEL's employees work in two kinds of environments: TEL's plants for manufacturing equipment, and customer sites where we start up and maintain our products. In order to maintain a safe environment at the workplace while working in customer sites, it is essential not only to obtain the customer's understanding but also to work in close cooperation with other equipment manufacturers and facility contractors. That is why TEL created "Our Approach to Safety First." It explains TEL's attitudes and details of our activities in four topics: product safety, preparing for safety during an emergency, safety in work tasks, and safety training.

### "Our Approach to Safety First" (an excerpt)

#### Work Safety – 4: Control of Hazardous Energy

In order to prevent accidents due to unintentional release of hazardous energy, we cut off such energy with electrical breakers, valves on hazardous gas sources, and other energy sources such as robots, and put locks and tags on when work is being done.



Lock-out and tag-out Example when multiple workers are at work

### Safety Patrol with Site-driven Approach

TEL carries out safety patrols in order to most effectively secure safety at our customers' plants and offer superior technology to them. Safety is only accomplished when there is both equipment quality and work quality. We see safety patrols as a measure against any kind of improperly maintained work environment and facilities, and also, as a means of improving TEL's equipment by feedback of data from our customers' work locations.

At Higashi Hiroshima FE station, the model for other FE stations, TEL has investigated the risks in customer facilities. In line with our site-driven approach, which emphasizes sharing information among all contractors and workers, we have instituted safety patrols, morning meetings, evening meetings, a "suggestions from the workplace" system and other safety programs. TEL also practices site-driven safety overseas. Tokyo Electron Korea's Kiheung support team promotes task safety activities, and in FY 2005 no injury accidents occurred during the rapid start-up work accomplished at the site.



Hazard forecasting meeting



Kiheung support team (receiving TEL internal award)

### Risk Assessment at Facilities

There are always some risks in the workplace: falling while walking or taking the stairs, burns or scalds during food preparation or serving, and so on. Therefore TEL is taking measures against accidents in the office as well as the plant. We assessed the risks in all our Japanese office facilities in FY 2005. The magnitude and frequency of injuries were assessed by the same methods as used for conventional tasks in other workplaces. Measures were then taken for tasks which were anticipated to have the highest risks. Some specific examples of the measures: bracing to prevent shelving from falling over, installation of handrails to stairways, warning signals at automatic doors, and dome mirrors in corridors.



Newly installed handrail

### Example of Product Safety (SEMI S8) – Ergonomic Assessment and Design of Equipment and Tasks

TEL designs all its equipment according to SEMI S8 guidelines on ergonomics in semiconductor production equipment. It calculates the recommended weight limit (RWL) using the equation developed by the American National Institute for Occupational Safety and Health for the most risky task of lifting heavy objects (assessment of occurrence of back pain) and uses the results in planning the optimal locations of components and the tasks associated with those components. The RWL is calculated using the factors listed below. The specific content of each task is determined by comparing the calculated RWL and actual component weight.

#### Factors for Calculating Recommended Weight Limit

- H: Horizontal distance from midpoint between ankles to position of hands
- V: Vertical distance from floor to position of hands
- D: Vertical distance through which object is lifted, from start point to finish point
- FM: Exponent for frequency
- CM: Exponent for combinations
- A: Angle between start point and finish point

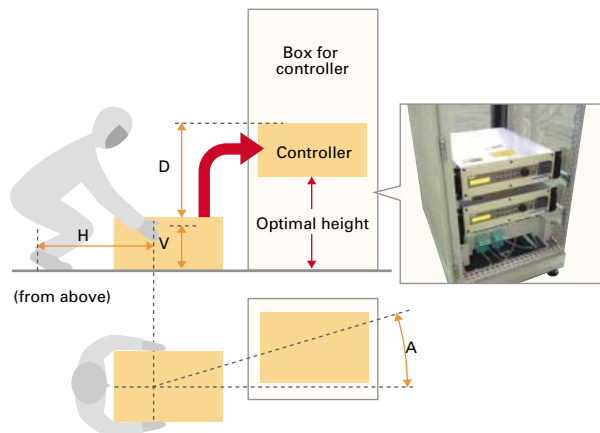
#### Standards for Assigning Tasks

Calculate result	Task assignment
$RWL > \text{Actual weight}$	1 person can perform task
$RWL \leq \text{Actual weight} \leq 2 \times (RWL \times 0.9)$	Lifting apparatus or 2-person task
$\text{Actual weight} \geq 2 \times (RWL \times 0.9)$	Lifting apparatus shall be used

### Example of plasma etch system

In accordance with the results of the above calculations, the location of the controller for the plasma etch system has been selected so that a single person can handle the controller.

#### Design of the Controller Rack



# Relationships with Employees

TEL's personnel system and training are designed to foster a company with versatile employees.

## Our Approach to Personnel

TEL's objectives are to energize our company and to foster the personal growth of every employee. We are determined to be a company that fosters versatile people, and we specifically target these three objectives:

- (1) No penalizing of employees who fail while taking reasonable risks in creative endeavors.
- (2) Rigorous fairness in handling of our personnel.
- (3) Fairness in compensation.

TEL's personnel system emphasizes the nurturing of employees. This is designed not merely to emphasize performance, but also the processes which resulted in that performance. The three approaches of "Competency to assess processes," "The individual's role (mission)" and "Results as based on employee's role (performance)" are expressions of our goal to perform fair assessments of employees as based on their contributions. Competency is not just the objective of assessment and inspection, but a measure of the growth of the employee's skills and abilities required for task categories. TEL will always support our employees in their efforts to improve themselves and provide them with opportunities to upgrade their skills and advance their careers.

## Concept of TEL's Personnel System



## Building Employees' Careers

We have introduced a variety of systems for employees to use in developing their careers. Each employee has an interview with his supervisor at the beginning of the fiscal year, when goals are set. This encourages the employee to adopt the attitude and habit of thinking over his own career, and it enables the supervisor to see the necessity of nurturing the employee with a medium- to long-term viewpoint.

Employees fill out a personal survey and a morale survey once a year. In the personal survey, employees describe any job changes they would like to make, their hopes and opinions about the company, and advice they

would like to ask for. In the morale survey, employees describe their view of their morale levels, their organizations and their workplaces. The company, business units and departments all use the contents of both surveys to study and plan improvements in the work environment, organization management, the personnel system, and other aspects of the company. We also have an in-house staff recruitment system as an opportunity for employees to develop their careers. Announcements of job openings and opportunities allow employees wanting further development and departments in need of new faces to match up with each other. Also, it allows ambitious employees who want to move from subordinate positions to career tracks to determine the appropriateness of different positions and pave the way to management.

## Approach to Employee Training

TEL offers an employee training program that encourages our employees to choose their own careers and supports their efforts to expand their range of competence through classroom training, on-the-job training and job rotation. Our goal is to create a win-win situation for the employee and the company, where the company grows through the employee's self-realization, thus energizing the organization and honing our competitive edge.

The company is determined to nurture:

- Talented people who will know how to lead
- Talented specialists who will create value through their example of expertise
- Talented self-starters who know exactly what they want to learn in life and how to continue studying it
- Talented people who will have marketability.

## Competency Training

TEL has begun to introduce a training program in response to our need for competency in every profession and at every level. "Competency" is a standardized quality, the possessor of which acts in ways necessary to achieve excellent results for his profession, job and rank. When employees display high competency, it contributes to the achievements of the organization, benefits the people around them, and stimulates the organization.

The introduction of competency training will ensure that our employees know exactly what abilities are expected of them at their own levels in their professions, and what kind of training they should receive. Competency is the basis for advanced performance, so each employee has visible goals for his or her career and can get a direct sense of his or her progress and improvement.

## Our Approach to EHS Training

TEL offers training on the environment, health and safety (EHS) under the principle of “the necessary training for the necessary people.” These courses are grouped by rank and are open both to Group employees and to employees of cooperating companies who work on TEL’s facilities. An EHS training program is also a required part of the curriculum for new hires.

### EHS Training

<ul style="list-style-type: none"> <li>Specialized training (for internal environmental auditors, special training on key environmental aspects of work)</li> <li>ISO 14001-based environmental training (for manufacturing plants)</li> <li>Training on TEL Eco-Activity (for office facilities)</li> </ul> <p style="text-align: center;"><b>Environment</b></p>	<ul style="list-style-type: none"> <li>Equipment-specific training</li> <li>Customer-specific site entry training</li> <li>Safety training for employees traveling overseas</li> <li>Site leaders’ safety training</li> <li>Advanced safety training</li> <li>Basic safety training</li> </ul> <p style="text-align: center;"><b>Health and Safety</b></p>
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## Implementing Safety Training

TEL conducts safety training under the motto of “Safety First.” This consists of training for offices, for clean rooms, for start-up at customer sites, and other situations, as appropriate to the employee’s work. Training content is regularly reviewed and updated, and employees are required to take the updated lectures. Basic and advanced safety training is offered in the form of ‘e-learning’ courses over the company intranet, so employees can take them at convenient times. A unified safety curriculum is taught to the entire Group. These courses are being expanded overseas, beginning with the Asia region.



Training of site leaders



Emergency lifesaving class

Safety training directed to site leaders was instituted in FY 2005. This training addresses the role and specific safety tasks of the site leader and includes case studies for group discussion. Over 400 employees took these lectures in FY 2005.

## Environmental Training

TEL conducts Group-wide environmental training, which is attended by all classes of office employees, sales personnel, administrators, field engineers, part-time and temporary employees, and so on. The training for manufacturing plant employees emphasizes the environmental topics in ISO 14001. Employees involved in critical tasks requiring special environmental measures receive special training.

Some facilities also offer environmental training in the form of “e-learning” over the company intranet.



Environmental training for new hires



Web based training

## TOPICS

### Emergency training examines accidents and near-accidents

People have no opportunities in daily life to see the semiconductor and FPD production equipment supplied by TEL, so it is quite hard for most people working with such equipment for the first time to anticipate its hazards. Yamanashi plant provides emergency training to its new employees, in addition to instructions on how to use tools and testing equipment, how to handle components, how to operate lifting equipment, and so on. Emergency training consists of case studies of accidents and “near misses,” cases where potentially serious accidents were narrowly avoided.

During this training, employees actually stand at the equipment involved in the potential accident or near-accident, so that they can directly experience the circumstances of the problem. For example, trainers have the employees remove a component and place a finger where it would be in danger of pinching, or feel what it is like to slip on a water puddle on the floor. Employees feel an electric shock from a low-frequency oscillator. These experiences help to awaken the employees’ sense of danger in truly hazardous situations.



Employees experiencing a simulated near-accident

# Communication with Stakeholders

Communicating with our stakeholders helps us grow as a company.

## Our Approach to Communication

TEL is proactive in our communications with all of our stakeholders. We share as much information as possible about our business activities with everyone in order to advance our environmental, health and safety program. We find the feedback we receive in the give-and-take of these communications is irreplaceable. We have been publishing environmental reports since 2000. These help to advance communication and are sometimes used as part of hands-on learning at manufacturing plants. We also provide EHS information on our website. We will continue to do our absolute best to further communications with our stakeholders.



Company introduction using an Environmental Report

## Sharing Information in the "EHS Times" and Intranet

TEL publishes an internal bimonthly magazine on the environment, health and safety titled "EHS Times" which gives simple descriptions of the minutes of Group EHS committee meetings, programs by Group companies or departments, and so on. Each company or office also publishes its own public-relations periodical, and these help keep company employees aware of EHS issues. TEL also uses its intranet to disseminate information throughout the company and for information exchanges.

## Our Approach to Social Contributions

TEL's Management Philosophy states that "We place the highest priority on gaining the trust and acceptance of customers, suppliers, investors and communities around the world." and "We therefore strive to be a faithful and cooperative member of the communities and nations where we do business." TEL is engaged in a variety of activities to contribute to society and build relationships of trust with governments and local communities around its facilities. This is true in Japan, of course, as well as overseas. These efforts are based on the above principles. TEL will expand our activities, hand in hand with our customers and neighbors.

## Efforts in Japan

### TEL receives Higo water resources conservation prize

Koshi plant has been running a water conservation program to increase use of water circulation systems and other means for saving water. Our efforts were recognized in FY 2005 in the form of a Higo water conservation prize. This prize is sponsored by Higo Bank and the Kumamoto Nichinichi Shimbun (newspaper). It is presented to groups who are involved in efforts against pollution or the depletion of ground water. In FY 2004, Koshi plant reduced its use of water at peak times by 40,000 tons thanks to the recirculation of industrial cooling water and vacuum pump seal water, the implementation of waterless vacuum pumps and other water conservation measures.



Higo water conservation prize presented

## TOPICS

### TEL's Corporate Philosophy Regarding the Environment

The Tokyo Electron Group recognizes that the preservation and continuing improvement of the environment is one of the most pressing matters facing society and must be given full consideration in business operations. TEL policies and operations are designed with the goal of achieving prosperity in harmony with the environment.

There are numerous examples of this philosophy in action. First, TEL works with neighboring companies to keep the community safe and clean by adopting streets that employees clean the area streets of trash as a volunteer group activity during work time. TEL also hosts a Texas Recycles Day Annual Event each year to educate employees about recycling at work and has recently joined Clean Air Partners program to help reduce the air pollution in central Texas. TEL has won both a Keep Austin Beautiful Award and a Keep Texas Beautiful Award for our both our community and environmental programs. In addition, TEL has signed to use 100% green energy.

On a very basic level, being a 100% green energy user is straightforward evidence of TEL's commitment to protecting the environment. TEL also joined the green power program early on as part of our overall corporate philosophy toward supporting the community as an active corporate citizen, especially in relation to the environment. Three years ago when we originally joined the program, there was a slight cost increase for using green power over traditional fuels; yet with

the fixed fuel cost as part of the agreement, we've actually begun to see a cost advantage to being a GreenChoice champion. TEL also wanted to support this important program for the state of Texas to emphasize the importance of using renewable energy and to help Austin Energy communicate that message to other corporations who may follow in our footsteps.

TEL is dedicated to working in accordance with corporate-wide best practices for the environment because, when it comes to preserving our environment, everyone is responsible. Yet, one of the biggest obstacles to renewable energy is the high capital costs - compared with the fossil-fuel alternatives. Renewable sources that are fairly competitive to the fossil fuel alternatives can be encouraged by businesses. TEL is currently doing this by being a part of Austin Energy's 100% Green Energy program.

A summary of an interview with Louis Steen, in Spring of 2004 with Austin Energy, the main electric and alternative power company in Austin.



Louis Steen

VP of Marketing  
Tokyo Electron U.S. Holdings, Inc.

# Comments from Stakeholders

TEL has received outside opinions on the contents of the 2005 Environmental and Social Report and our business activities. We are especially indebted to Mr. Minoru Kagino, a user of our equipment, and Mr. Shu Woei Yu, a coordinator for users of our equipment in Taiwan, for their suggestions. We will use theirs and others' suggestions in planning our future activities.



**Minoru Kagino**

Chief Specialist  
Engineering Standardization Group  
Engineering Planning Division

Semiconductor Company  
Toshiba Corporation

## (1) Thoughts on TEL's Environmental Sustainability Report

While the Kyoto Protocol has come into effect in February 2005, environmental issues have grown more and more serious. I feel that your company's policies on environmental preservation are stated in your Environmental Report in a way that is clear and easy to understand, and your policies are not passive, but very active in character.

Also, I was impressed by the explanations of the various items on environmental preservation, and how you are publicizing the significance of your environmental activities and the relation between your business and environmental activities.

## (2) Comments on TEL's EHS Activities

The semiconductor industry is characterized by greater use of materials with large environmental burden and greater energy consumption than the rest of the electrical and electronics industries. Its posture on environmental preservation is a very important matter. Your company is actively pursuing very specific activities for the purpose of preserving the environment, on the basis of your policies, without being distracted by the profit that is within your grasp. We can see this in the fact that, not only are you setting equipment specifications and developing equipment in consultation with each of your customers, you are taking the lead in activities of domestic and international groups like Semiconductor Equipment and Materials International (SEMI) and the Semiconductor Equipment Association of Japan (SEAJ).

## (3) Impressions of TEL from Toshiba Corporation

As our company has been building clean rooms over the last several years, we have had a serious problem with requirements for protecting the environment. Of course, the equipment we use in the clean room has itself been subject to even stricter demands. Not only has TEL been completely "can-do" about our suggestions when we have met with you, you have also contributed immensely to our effort with your ideas and your environmental measures for new clean rooms. We see you as one of our strong partners.

## (4) Hopes and Expectations for TEL

As the semiconductor industry continues to grow and grow all over the world, it is a critical problem to reduce its environmental burden, and there is a great social responsibility to take leadership in those activities. For the environmental measures that we semiconductor producers have to take, we will desperately need the cooperation of our supporting industries. This is especially so for energy conservation. Usually, equipment has been improved without regard for other affected equipment. But electric power supply facilities in semiconductor factories have been subjected to far too many specifications in power requirements, resulting in inefficiencies, and this has to be simplified. Equipment makers have to design their equipment in consultation with the semiconductor producers. I would like to see development of equipment coordinated with design of factory power equipment.



**Shuh Woei Yu**

Vice President and General Director

The Industrial Technology  
Research Institute

## (1) Thoughts on TEL Environmental Sustainability Report

Congratulations are in order for Tokyo Electron's fifth publication of the Environmental Sustainability Report. The report truly reflects TEL's commitment to continuous improvement on environmental, safety and health management. It is very encouraging to learn that TEL now embraces the fundamental principles of Corporate Social Responsibility as president and CEO Sato\* has stated.

## (2) Comments on TEL's EHS Activities

TEL's EHS activities definitely enhance its position as one of the leaders in the semiconductor production equipment industry. The product-related environmentally benign initiatives benefit both TEL and its customers. With the worldwide growing emphasis and practice of cleaner production technologies, TEL's customers now have the opportunity to jointly develop environmentally benign semiconductor production equipment as illustrated in the report.

## (3) Impressions of TEL from ITRI's

The 2004 Environmental Sustainability Report describes TEL's products, business, environmental management and social activities. The comprehensive information provided in the report makes it easy for all interested parties to gain full understanding of TEL's EHS management philosophy and achievements. For instance, the coverage on TEL's health and safety activities is highly informative.

## (4) ITRI's Expectation for Environmental Benignity of TEL Products

It is hoped that TEL can share its products' environmental benignity features with its customers and other equipment manufacturers. This will further enhance TEL's leading edge over its competitors.

## (5) Hopes and Expectations for TEL

It is hoped that the environmentally benign semiconductor production equipment initiatives can be extended to the flat panel display industry since this particular business sector faces very challenging EHS issues. Experiences gained by TEL in the semiconductor industry are very useful in convincing its customers in the flat panel display industry to adopt the same or similar EHS initiatives. In addition, it is highly recommended that TEL engage in more international collaboration programs to promote its EHS management philosophy and share its practices with customers outside of Japan.

\*As of August 2004

## Our cover photograph

The cover of this report illustrates TEL's determination to act responsibly toward society and the environment. This report details our professional and environmental activities, introduces some of our employees and shows some of our contributions to the community. We hope it will provide a comprehensive picture of our company.

The photograph at the right of the center depicts a program at Tokyo Electron U.S. Holdings, Inc., a "Take Your Kids to Work Day" event hosted for the benefit of our employee's children.



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