

# **Environmental and Social Report 2008**

**TOKYO ELECTRON LIMITED** 

# **TEL Values**

Tokyo Electron Limited (TEL) summarized the values and codes of conduct of the Tokyo Electron Group as TEL Values in April 2006. We will share TEL values with all employees of the Group around the world, which will in turn drive us toward new growth in the future.



## **TEL Values**

#### Pride

We take pride in providing high-value products and services

- We offer our customers cutting-edge technological products, along with the highest level of quality and technical service, in the pursuit of total customer satisfaction.
- We consider profit to be an important measure of value in our products and services

# **TEL Values**

# Ownership

We will keep ownership in mind as we think things through, and engage in thorough implementation in order to achieve our goals

- We are always alert to problems, and tackle challenges with enthusiasm and a sense of responsibility
- We make decisions quickly, and take what we consider to be the best course of action.

# **TEL Values**

# Teamwork

We respect each other's individuality and place a high priority on teamwork

- We create a workplace with an open atmosphere and positive communication.
- We establish relationships of trust with our business partners in order to facilitate mutual growth.

#### **TEL Values**

# Challenge

We accept the challenge of going beyond what others are doing in pursuing our goal of becoming number one globally

- We view changes as opportunities, and respond to them flexibly and positively.
- We are tolerant of failure, and consider it important to learn from the process and results

#### **TEL Values**

## Awareness

We must have awareness and accept responsibility for our behavior as respectful members of society

- We strictly comply with laws and regulations and the rules of society.
- We give top priority to safety, health, and the global environment.
- We strive to become a company that local communities hold in high esteem.

## **Editorial Policy**

This report has been written to demonstrate the directions the Tokyo Electron Group is taking to follow through on its commitment to environmental, health, and safety issues as it moves into the future, Tokyo Electron stands firm in its commitment to the environment as an integral part of its business operations.

- In the section titled "Commitment by Top Management," the Chairman and President of TEL express their opinions on the Group's societal roles and long-term missions. We are pursuing the photovoltaic (PV) cell production equipment business as an initial step to launching and establishing a clean technology business. Pursuing PV technology is in parallel with our ongoing efforts to make our business kinder to the environment. This report will detail the background and objectives for this new business venture (see pages 4 and 5 and pages 8 and 9).
- A portion of the "Highlights" section features the TEL missions, defining the Group's missions and describing how the Group intends to contribute to environmental solutions through its business. We have also received comments from a third-party expert on TEL missions (see pages 6 and 7).
- We invited our customers and suppliers to a roundtable meeting themed, "Toward Halving the Environmental Impact at Semiconductor Factories," where participants shared their respective challenges and actions and discussed their roles in working to achieve this goal (see pages 10 to 13).

In preparing this report, we referred to the Environmental Reporting Guidelines (Fiscal Year 2007 Version) issued by Japan's Ministry of the Environment and the 2006 Sustainability Reporting Guidelines published by the Global Reporting Initiative.

We hope we can promote communication with all stakeholders of the Tokyo Electron Group through this report and incorporate their opinions into our future activities.

# Scope of Reporting

Organizations covered: Tokyo Electron Group

#### Japan

- Tokyo Electron Limited
- Tokyo Electron AT Limited
- Tokyo Electron Tohoku Limited
- Tokyo Electron TS Limited
- Tokyo Electron Kyushu Limited
- Tokyo Electron Technology Development Institute, Inc.
- Tokyo Electron Software Technologies Limited
- Tokyo Electron FE Limited
- Tokyo Electron PS Limited
- Tokyo Electron BP Limited
- Tokyo Electron Agency Limited
- Tokyo Electron PV Limited
- Tokyo Electron Device Limited
- United States
- Tokyo Electron U.S. Holdings, Inc.
- Tokyo Electron America, Inc.
- Tokyo Electron Massachusetts, LLC.
- Timbre Technologies, Inc.
- TEL Venture Capital, Inc.
- TEL Technology Center, America, LLC.
- TEL Epion, Inc.

#### Europe

- Tokyo Electron Europe Limited
- Tokyo Electron Israel Limited

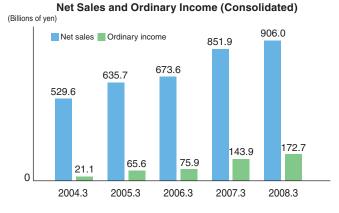
#### Asia

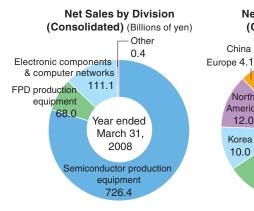
- Tokyo Electron Korea Limited
- Tokyo Electron Korea Solution Limited
- Tokvo Electron Taiwan Limited
- Tokyo Electron (Shanghai) Limited
- Tokyo Electron (Shanghai) Logistic Center Limited
- Period covered: Fiscal year (FY) 2008 (April 1, 2007 to March 31, 2008)
- Topics covered: Environmental, social, and economic

# **Corporate Profile**

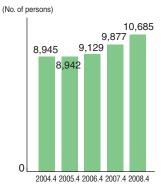
Company name:	Tokyo Electron Limited	(TEL)
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- Address: Akasaka Biz Tower, 3-1 Akasaka 5-chome, Minato-ku, Tokyo 107-6325, Japan Tel.: +81-3-5561-7000
- Established: November 11, 1963
  - Capital: ¥54,961,190,000 (as of April 1, 2008)
- Main products: Semiconductor production equipment and flat panel display (FPD) production equipment
  - Employees: 973 (non-consolidated, as of April 1, 2008) 10,685 (consolidated, as of April 1, 2008)





**Group Employees** 



**R&D Expenses** (Billions of yen) R&D expenses Capital expenditures 56.9 66.0 4.1 43 8

Net Sales by Region (Consolidated) (%)

Year ended

March 31,

2008

Taiwan

30.0

**Capital Expenditures and** 

China 4.3

North

America

12.0

Korea

10.0

0

SE Asia

Japan

35.8

3.8

1.0 9.8 2004.3 2005.3 2006.3 2007.3 2008.3

22.7

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# **Commitment by Top Management**

The social mission of the Tokyo Electron Group is to recognize the severity of global environmental issues and make positive contributions toward solving them through our business operations



Tetsuro Higashi Chairman & CEO Tokyo Electron Limited



Contributing to the global community through technological breakthroughs that enable a substantial reduction of our environmental impact—this is the Group's mission

Sixty-one years have passed since the first transistor was invented in 1947 in the aftermath of World War II. During this period, semiconductors have replaced vacuum tubes to become the technological mainstay, helping achieve significant improvements in productivity and making society more prosperous. Considering how much energy would have been required to achieve the current productivity level without semiconductors, we realize how big a role semiconductors have been playing in order to sustain the affluent and convenient lifestyles we enjoy today. However, because of this high productivity and convenience, our energy consumption has also risen significantly and the global environment is now heading toward the limit of its sustainability.

Given the fact that semiconductors serve as a basis for many, if not all, modern industries, it is imperative that our environmental impact be reduced at every stage of the product lifecycle, from manufacturing to consumer use, by improving energy efficiency and taking other necessary measures. Well aware of this pressing social situation, we are committed to becoming a part of environmental solutions. This is one of the key elements of the TEL Missions (see pages 6 and 7). Promoting the photovoltaic (PV) cell production equipment business, together with an ongoing focus on increasing the energy efficiency of semiconductor and FPD production equipment

To achieve lower electricity consumption worldwide, alternative energy technologies need to be developed and commercialized for widespread use as soon as possible. To make this happen, the Group has established a joint venture with Sharp Corporation to launch a PV cell production equipment business.

We held extensive discussions on which direction the Group should go in light of the technological and economic obstacles the world is now facing. Our conclusion was that we should not limit ourselves to existing semiconductor and FPD fields but make further direct contributions to the environment.

# Developing natural energy technologies is not only a responsibility but an opportunity

In the hope of closing the gap with developed nations, emerging countries are now looking to alternative energy sources that can be supplied efficiently, safely and in sufficient amounts. Solar power and other natural energies must be at the core of such alternative sources. In order to encourage widespread use of PV cells as the standard, we need to improve the efficiency of their light energy conversion and offer related equipment at a lower cost. Making this happen is our responsibility, but we can also see a great number of business opportunities in this area.

At the Tokyo Electron Group, we have a culture that welcomes active and open discussion among employees. Our employees are passionate about conserving the environment and a mind-set of motivating and inspiring colleagues permeates the entire Group. Our contributions to global communities continue to expand across wider areas. Our efforts to develop and commercialize PV cells have only just begun; metaphorically, we have only accomplished the first 50 meters of a full marathon.

This year will be marked as the starting point of more substantial contributions to the global environment through innovation and growth.

# Development and adoption of natural energy products to help solve energy issues and achieve world peace

Steadily accumulating technological capabilities has given rise to a new PV cell production business

The Tokyo Electron Group has decided to enter the clean technology development market in full force. Such a bold decision would have been impossible without the production equipment technologies we have developed and manufactured over many years.

Semiconductors have been of tremendous assistance in making our lives more convenient and affluent. However, when we step back and think about what we truly mean by "affluence," considering today's societal problems such as international economic disparities, we realize that solving energy issues is more urgent than pursuing further convenience.

It is not surprising that society's expectations of the Group change over time as contemporary social concerns also change. We anticipate that the PV cell production equipment business will help meet present-day societal needs. This new initiative will be developed based on the solid foundation we have built up over many years, including a variety of improvements and technological solutions we have provided for our customers to help improve the productivity of their factories, and semiconductor and FPD production equipment manufactured at those sites.

# We will aim to reduce our environmental imact by half by 2015

About 80% of the total environmental impact of semiconductor production equipment across its lifecycle is generated when the equipment is in use at customers' factories. Thus, we will focus on proposing and implementing measures to improve energy efficiency of our products. In fiscal 2008, we successfully reduced electricity consumption of a certain product by about 50% under a technological partnership set up with client facilities. This accomplishment was recognized as an excellent example of environmentally conscious initiatives, for which we received a customer award.

As the next step, we aim to develop equipment that enables a 50% reduction of the total environmental impact of new customer factories scheduled for completion in 2015. This goal is specified in our latest mid-term plan (see page 18).

The Group will continue taking aggressive actions to reduce the environmental impact of our products and business.

1 Davos meeting: Annual meeting of the World Economic Forum held in Davos, Switzerland, where the world's corporate managers, politicians, and economists gather to discuss global politics and the economy.



Kiyoshi Sato President & COO Tokyo Electron Limited



# Development of clean technologies is the most important task in solving energy issues

The sheer gravity of global energy issues encouraged us to start a PV cell production equipment business in earnest—as an initial step to tap into the clean technology market—in parallel with reducing the environmental impact of existing products.

Discussions at the Davos meeting<sup>1</sup>, which I have attended for the past two years, acutely reminded me that the current energy situation has reached a point where unavailability of new energy resources to replace oil reasonably soon could lead to international conflict.

I believe that our initiative to achieve a stable supply of highperformance yet affordable PV cells in the near future will ultimately help close the economic gap and maintain peace throughout the world.

Maintaining a global perspective is important today as a wide range of issues need to be addressed. At the Davos meeting, I was able to gain a number of fresh perspectives, which I now share with our employees on various occasions.

Recognizing the value of our business in society, we at the Tokyo Electron Group will continue striving to establish outstanding technologies that contribute to the global community.

# **TEL Missions**

# All missions of TEL are for achieving innovation, growth, and preservation of the environment

#### **About TEL Missions**

We at TEL have recently defined our core missions. As our roles have changed in response to our dynamically changing society, all TEL members need to share an understanding of the direction TEL should take looking toward the future. The defined missions were announced by our Chairman and CEO Tetsuro Higashi at the Tokyo Electron Group Spring 2008 Top Management Conference. The text of this announcement is shown below. The TEL missions, in essence, call for: aggressive pursuit of technological breakthroughs based on our core semiconductor and display technologies in order to contribute to the sound development of our industry and broader society; and contributions to environmental solutions through the operation of a new business as well as reduction of the environmental impact of our existing products and operations. We, at the Tokyo Electron Group, are committed to making positive contributions to society by providing new value under the themes of innovation, growth, and the environment.

# Innovation, Growth, the Environment

The electronics industry, in which Tokyo Electron operates, and the information and telecommunications technology field in particular, is becoming increasingly important globally. The reason is that it supplies core technologies for various industries expected to demonstrate high growth in the future, including the medical, educational, financial, automotive, aerospace, safety and environmental fields. As core technologies supporting these industries, Tokyo Electron's products have contributed greatly to the development of industry along with its technological innovations. Looking ahead, the technological innovation of these fields themselves is expected to be accompanied by additional growth supported by new advances incorporating technologies in the adjacent fields of nanotechnology, biotechnology and MEMS technology.

Tokyo Electron reaffirms its commitment to continue its unremitting endeavors with regard to the existing products and technologies that are the cornerstone of its business as well as new fields adjacent to them.

In this way, we will take the lead on a worldwide scale through "Innovation" and "Growth."

Furthermore, while technological development contributes to an improved quality of life for humans, it can also have an adverse impact upon safety and the environment, and if not addressed, this situation could speed up the depletion of global energy resources and the degradation of the global environment. Tokyo Electron intends to contribute to the healthy development of humankind, and the company acknowledges that one of its most important missions is to contribute to reducing environmental impact, both as a global phenomenon, and as an issue inherent within the technological fields in which it is active.

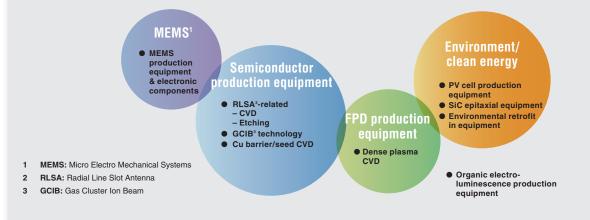
Tetsuro Higashi Chairman & CEO Tokyo Electron Limited

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# Addressing Environmental Issues through Technologies

TEL believes tackling environmental issues is a part of the responsibilities and missions of any corporation. We are also aware that there are substantial business opportunities in this area. The Group is therefore focusing on its new environment/clean energy business including PV cell production equipment as a part of its mainline operations, while striving to develop and innovate related technologies. At the same time, we are making progress in reducing the environmental impact of our existing products, such as semiconductor production equipment and FPD production equipment.

# Strengthening R&D in the Environment/Clean Energy and in Existing Operations





# Third Party Comments on TEL Missions

# Itaru Yasui, PhD

Principal Fellow, Center for Research and Development Strategy, Japan Science and Technology Agency; Professor Emeritus, the University of Tokyo; Vice-Rector, United Nations University

Human activities have already exceeded the sustainable limits of the earth's natural and energy resources. If we continue producing, consuming and disposing materials in massive quantities as we do today, human society will eventually collapse due to global ecological imbalance. We must change the structure of our society so as to lead sustainable lives where resources are used within the capacity of our planet.

While the necessity of such change has been discussed and recognized worldwide at a rapid pace, business communities in general are still hesitant to change their traditional business models, which are based on the assumption that the present social paradigm of qualitative expansion will continue.

Given this, I find the missions that TEL has announced excellent and visionary, as they recognize the hard reality today's world is facing and clearly define the company's roles and directions to prevent the crisis.

With regard to these missions, I would like to say a few words to TEL employees. As the words "innovation" and "growth" used in the missions could be considered somewhat trite, I am concerned that the message contained in the missions may not carry the same significance among employees as Chairman Higashi truly intends to communicate. I hope all TEL employees will embrace the true meaning of the missions, i.e., recognizing TEL's roles in a society which no longer seeks quantitative expansion, and promoting correct innovation and correct growth.

I also look forward to TEL holding extensive discussions within the firm about its roles in light of total optimization within society, based on which the company will work to innovate itself and achieve growth while contributing to the development of society. By doing so, I believe TEL will be able to help conserve the global environment and society as we know it.

# Development of the PV Cell Production Equipment Business

Amid growing public expectations for renewable energy, the Tokyo Electron Group has announced the launch of a PV cell production equipment business.

# What is PV Power Generation?

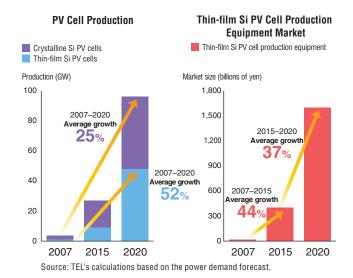
Solving the problem of climate change and global warming is the most pressing agenda for society. We need to shift from being dependent on fossil fuels to becoming a low carbon society by utilizing renewable energy. Renewable energy is expected to make significant contributions toward preventing global warming as it can be used semi-perpetually while emitting less greenhouse gases than current mainstream energy sources.

PV power generation using solar energy is the leading player of such renewable energy. However, further technological innovations and cost reductions are necessary for common use of this green energy in order to overcome present challenges, such as increase in energy conversion efficiency (from solar energy to electricity), shortage of materials to produce related equipment, and cost/ efficiency issues.

The Group has started the PV cell production equipment business with a strong commitment to making contributions to environmental solutions through our technological excellence.

With technological innovation, PV cells will be applied across broader areas





## PV Cell Business at the Tokyo Electron Group

Following an extensive period of basic research, the Group has decided to start a PV production equipment business.

TEL agreed with Sharp Corporation ("Sharp") to launch a joint venture, Tokyo Electron PV Limited, which will specialize in the development of commercial plasma CVD systems for use in thinfilm silicon PV cells. (Please note that this agreement pertains only to plasma CVD systems for thin-film silicon PV cells: it is not an agreement on a comprehensive partnership on FPD production equipment and other operations.)

Thin-film silicon PV cells, containing a thin layer of silicon deposited on a glass substrate, is a type of solar cell that has attracted significant interest in recent years. We aim to develop higher productive plasma CVD systems for thin-film silicon PV cells by combining the Group's experience and expertise in vacuum plasma technology applied to the mass production of semiconductors and FPD production equipment, with technology for thin-film silicon PV cell production that Sharp, a leading company in PV cell production, has built. The development of such CVD systems will be conducted by the new joint venture of the Group and Sharp, and production and sales will be conducted solely by the Group. We intend to introduce the first model to market in 2009.



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We will strive to achieve worldwide use of solar energy to help solve environmental problems.



## Mitsuru Onozato

Senior Vice President General Manager FPD/PVE Division Tokyo Electron Limited

I feel climate change is happening—with greater intensity.

We at the Tokyo Electron Group have made up our minds to make a fundamental difference in society through our main business by using our reservoir of excellent technologies. We documented this commitment in the TEL Missions (see pages 6 and 7). The PV cell production equipment business is the first step we have taken to materialize these missions. Out of a variety of production methodologies to produce PV cells, we will develop plasma CVD systems for thin-film silicon PV cells.

The objective of this new business is to develop PV cells with great power efficiency and to make them available worldwide at affordable prices. We are confident that we can make this happen by combining the technologies of PV cell leader Sharp Corporation and our manufacturing processes and equipment technologies steadily built on the back of development of semiconductor and FPD production equipment.

Looking toward the upcoming launch of joint development in full force, the two companies share a strong passion and commitment to developing excellent PV cells.

For TEL, semiconductor business is well within our expertise. Our extensive experience tells us the best road to take in terms of everything from business models to people's mindsets in addition to responding to the expectations of society.

In contrast, energy-related business is unknown territory for us. We are bracing ourselves for a totally new world, from technical elements of PV cell production equipment to target markets and collaboration with policymakers on electric power and with partners in developing countries.

Nonetheless, we have taken a bold initial step looking well into the next decade. We do not consider this PV cell production equipment business as a spin-off of our existing semiconductor and FPD businesses. Rather, we intend to grow this PV cell production equipment business under the long-term goal of creating another mainstay business that represents our new corporate DNA.

Sunlight is an energy source that everybody on this planet can benefit from equally. Whether you are in a developing or developed country does not matter. We hope to see the creation of a low-carbon society where people all over the world, including in developing countries, use PV cells manufactured with our equipment. We will work tirelessly toward achieving this goal. Toward a low-carbon society, we look to TEL's reservoir of production equipment technologies.



## Tetsuroh Muramatsu PhD

Executive Officer Group General Manager Solar Systems Group Sharp Corporation

Since 1959 when we began our R&D efforts on PV cells, we at Sharp have devoted about half a century to making this new energy source one that can be used by more people and in broader areas. In addition to our long-standing focus on crystalline PV cells, we have been focusing our R&D efforts on thin-film PV cells and the expansion of related business.

Producing thin-film PV cells requires a volume of silicon 100 times less than its crystalline counterparts. These products do not lose the capacity to generate power even at high temperatures. Their major target markets are the United States and European countries for use as electricity power sources.

Another important strength is the short production process. Plasma CVD systems hold the key. Each unit of PV cells produced within plasma CVD systems will substantially determine whether or not a technological breakthrough can take place, resulting in higher energy conversion efficiency and substantially lower prices of thinfilm PV cells.

To date, we have produced plasma CVD systems at our own facilities. To achieve mass production and further improve performance of the systems, we have agreed to work together with Tokyo Electron, a leader of semiconductor and FPD production equipment business with sophisticated technologies and a company with profound understanding and a solid strategy centering on the future of PV cells.

At our new factory currently under construction in Sakai City, Osaka, we plan to install these plasma CVD systems. In the initial phase, we will aim for a 480 MW output level. Our eventual target is global output of 1 GW by operating additional overseas plants.

According to a forecast by the European Renewable Energy Council (EREC), global electricity demand will double from the current level by 2040, about 25% of which will be generated by solar energy. I believe that a combination of Tokyo Electron's equipment technologies which have been built over many years and Sharp's thin-film PV cell technologies will help our society move one step closer to becoming "low carbon."

TOKYO ELECTRON Environmental and Social Report 2008

# Roundtable Meeting with Stakeholders **Reducing Environmental Impact by Half at Semiconductor Factories** —How can semiconductor-related companies best collaborate to achieve total optimality?

Reducing the impact of the chip-making process on the environment is an industry-wide issue for the semiconductor sector, as the process involves massive use of electricity, chemical substances and other resources. We held a roundtable meeting on July 1, 2008 to discuss necessary collaboration and cooperation in order to reduce the environmental impact at semiconductor factories by half, inviting representatives from semiconductor manufacturers, relevant equipment and component manufacturers and a company that designs and constructs clean rooms.

#### Invited Participants in the Roundtable Meeting

Intel Corporation	Mr. Hidetoshi Sakura
Samsung Electronics	Dr. Tae-Jin Park
Toshiba Corporation Semiconductor Com	pany Dr. Yuichi Mikata
Edwards Japan Limited	Mr. Chiaki Urano
Ebara Corporation	Mr. Nobuharu Noji
Taisei Corporation	Mr. Tomoo Gocho

Environmental Activities within the Semiconductor Industry: Progresses to Date and Future Challenges

**Saito (TEL):** The Tokyo Electron Group plans to achieve a 35% reduction in energy use per unit area of wafer from the 1999 level by 2010, in line with the policy of ITRS<sup>1</sup>. We set this reduction target as we believe that reducing the environmental impact of every single process in semiconductor manufacturing is an industry-wide responsibility. ITRS recently released an additional Roadmap which calls for a 50% reduction of the total fab energy use during the 2016-2022 period from the 2007 levels. The semiconductor industry needs to take collective action to meet this target.

Meanwhile, to address the degrading environment, every member of the semiconductor industry, from upstream to downstream, needs to intensify their environmental efforts by setting additional targets in areas not covered by the SEMI S23<sup>2</sup>, such as waste, chemical substances and recycling.

- 1 ITRS: International Technology Roadmap for Semiconductors, an organization of the semiconductor industry which sets industry-wide targets on technologies, environment and other applicable elements.
- 2 SEMI S23: Guidelines for energy conservation for semiconductor production equipment issued by the Semiconductor Equipment and Materials International (SEMI), an international industry organization for semiconductor/FPD production equipment and material manufacturers.



**Sakura:** At Intel, we have a system in place to produce products with a lower environmental impact. When developing a new manufacturing process, we develop guidelines covering relevant matters, such as energy efficiency improvement, restriction on the use of chemical substances and occupational safety with reference to relevant guidelines like SEMI, RoHS, and EICC.<sup>3</sup>

Our energy consumption target during the period from 2002 to 2010 aims at an average 4% annual reduction per production unit. We have achieved a total 20% reduction over the past five years. As the next step, we are working toward a long-term goal of reducing electricity consumption using guidelines such as SEMI S23 in our use of relevant equipment. We have also asked our suppliers to present their roadmaps to work together for this purpose.

3 EICC: The Electric Industry Code of Conduct, guidelines for responsible supply chain management

Park: In the Seoul metropolitan area, regulations on the emissions of CO<sub>2</sub>, NOx, SOx and other applicable substances have been changed from a concentration base to a total emission base. A 50% reduction of these emissions from the 2001 levels is also required. To meet these new requirements, our factories are analyzing the substances captured by gas scrubbers and taking necessary actions. We have accomplished a high level of energy conservation in our operations, thanks to support from the semiconductor manufacturer. **Mikata:** Reducing CO<sub>2</sub> emissions directly means reducing electricity costs. This is a powerful motivation for us at Toshiba to lower emissions. Over the past four years, we have slashed our per unit area electricity use of new facilities by half compared to 200-millimeter wafers. A shift to the use of 300-milimeter wafers was the major reason for reinforcing our reduction efforts, which, in turn, led us to reduce consumption per basic unit. As a result, we have successfully limited the increase of CO<sub>2</sub> emissions for the past three to four years, despite the fact that our productivity has increased during the period.

# Current Environmental Cooperation among Firms related to Semiconductor Manufacturing

**Mikata:** Toshiba started the Clean Room Econology<sup>4</sup> Project with production equipment manufacturers and facility engineers from 2004. In this trilateral initiative led by Toshiba's production manager, working groups (on power facilities, manufacturing equipment, etc.) discuss and explore the optimal specifications of relevant facilities. The project has helped us reduce energy loss and generate technological innovation as well as new ideas to improve energy efficiency.

4 Econology: A word coined from "ecology," "technology" and "economy."

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Park: I agree with the necessity of such trilateral consultation in the development phase. In a new semiconductor manufacturing process, for example, the temperatures and pressures involved would be different from conventional ones, which means that the types of gases required and the conditions of chemical substances would also be different. However, we do not usually have access to detailed information not included in the MSDS<sup>5</sup>. We thus seek necessary supplemental information from equipment manufacturers.
5 MSDS: Material Safety Data Sheet

**Urano:** While semiconductor manufacturers develop roadmaps for reducing  $CO_2$  emissions and taking other environmental steps, the most important element in the next phase is which specific actions are to be taken along with the roadmaps. Therefore, it is essential to examine every element (equipment, component, etc.) of the chipmaking process. We, as a supplier of exhaust systems, are doing our part by working to improve energy efficiency of our component products. If we can obtain related information, such as equipment locations and the distance from a gas scrubber and dry pumps, we will be able to suggest more concrete, useful ideas.

**Sakura:** At Intel, we meet equipment manufacturers regularly to share information on new technologies at a very early stage.

# **Cooperation in the Future**

**Urano:** Semiconductor manufacturers and equipment manufacturers should always work closely with one another in developing the manufacturing process. Energy use can be reduced by simple improvements such as installing pipes of optimal length and treating gases closer to the manufacturing equipment. Full consideration of the layout of the entire clean room may lead to smaller and thus cheaper dry pumps.

**Park:** Such discussion for improvement is much needed. We revised our manufacturing process three times in the past but did not witness any effective collaboration among the related parties. The

three parties involved—the facility and equipment manufacturers and our company—require an occasion to coordinate their respective actions, rather than implementing them individually. Discussing and agreeing on a policy to reduce energy consumption would generate much greater benefits. To this end, we need to invest time for in-depth discussions.

**Mikata:** Improving productivity is a very effective measure to reduce  $CO_2$  emissions. Enhanced processing capabilities per unit hour or higher utilization of equipment means that the same number of facilities produces a greater number of semiconductors, which indicates reduced electricity consumption and  $CO_2$  emissions.

Cutting back on standby power consumption is another challenge. Most equipment, barring lithography equipment, is not necessarily used all the time throughout the entire wafer processing operation. Standby electricity may account for 20 to 30% of overall power consumption depending on the size of fab, and we hope a power-saving function, just like "sleep mode" for PCs, will be made available. It should start with standardizing the specifications of sleep mode.

**Ibuka (TEL):** I agree. A sleep mode needs to be redefined by SEMI Standards or their equivalents.

**Noji:** Speaking of reducing power consumption, Ebara is a pioneer in energy-efficient pumps and has been providing pumps powered by variable-speed motors since 1995. These pumps enable the setting of a sleep mode. In reality, however, some equipment manufacturers are reluctant to install the pumps, partly due to the implications on the yield rate and manufacturing process.

However, over a decade of operation, our dry pumps with variable-speed motors consume 80% less energy. Future improvement of processing technology for pump components will achieve greater energy efficiency of the pumps alone. We need to seek comprehensive solutions that combine improved performance of individual equipment and a reduction in standby power consumption.

### Roundtable Meeting with Stakeholders

# **Reducing Environmental Impact by Half at Semiconductor Factories**



Hidetoshi Sakura Intel Corporation



Tae-Jin ParkYuichi MSamsung ElectronicsToshiba C



Yuichi Mikata Toshiba Corporation Semiconductor Company



Chiaki Urano Edwards Japan Limited



Nobuharu Noji Ebara Corporation



Tomoo Gocho Taisei Corporation



**Ishida (TEL):** To attain higher productivity, minimizing defects is the key. More active communications and cooperation among semiconductor manufacturers, equipment manufacturers and material manufacturers with regard to the number of required processes and the costs of respective processes will bring about reductions in the number of defective products.

While I understand some information is subject to confidentiality restrictions, I still believe collaboration among the relevant companies is indispensable in developing next-generation devices. **Araki (TEL):** How about designing overall factory layout? Some cases show simply changing the pump location or pipe length has led to higher productivity by 5 to 10%.

**Gocho:** As a construction company, we focus primarily on providing sturdy, long-lasting buildings in earthquake-prone Japan. Using the same approach, we are working on comprehensive measures to protect clean rooms from quake-related damage such as through the development of seismic control and isolation technologies. Having said that, when we actually construct a semiconductor factory, it is very difficult for us to do anything more than design details of the factory in line with the grand design, as the time from the obtainment of the grand design on the occasion of bidding to the launch of construction is generally quite short.

We wish to be involved from the planning phase, where possible. We currently find it difficult to take the initiative and propose ideas. We of course intend to undertake further study on the relevant equipment, which is still an unknown quantity for us.

# Necessity of Both Individual Cooperative Action and Collective Standardization

Yamanaka (TEL): It is true that certain elements can be standardized through discussions among relevant trade associations. On the other hand, one-on-one discussions may not always bring progress as the discussing parties may or may not acquire the contract, or the relevant contract may or may not be determined by bidding. Ibuka (TEL): Discussions among relevant industry organizations, such as SEMI, Semiconductor Equipment Association of Japan (SEAJ) and the Japan Electronics and Information Technology Industries Association (JEITA), sometimes lead to solutions. We in the same industry can discuss, share information and cooperate with one another, where needed, to the extent that confidentiality issues do not arise.

**Ishida (TEL):** When it comes to cooperation, it would be sensible for semiconductor manufacturers to take the lead.

**Mikata:** I think effective cooperation takes place when relevant parties — the semiconductor manufacturer, the equipment manufacturer and the construction company — exchange relevant information and insights to eliminate inefficiencies at each relevant process in the entire project.



Kaoru Araki Sales & Services Division Japan Tokyo Electron Limited



Hiroshi Ishida **Marketing Division Tokyo Electron Limited** 



Munetsugu Yamanaka Satoshi Saito **Corporate Strategic** Planning Dept. Tokyo Electron Limited



Environment. Health & Safety Center Tokyo Electron Limited



Shigehito Ibuka Environment, Health & Safety Center Tokyo Electron Limited



Environment Health & Safety Center Tokyo Electron Limited

At the same time, standardization efforts that have the participation of all relevant parties are also very important. In developing the SEMI S23, the aim was to create a standard that can facilitate lower energy consumption. To this end, a unified coefficient was established and demands from both equipment and semiconductor manufacturers were accommodated to the greatest extent possible. The crux is that we need to forge collaborative working relationships among related parties by aligning interfaces and identifying what should be done independently and what should be done through collaboration. Both individual collaborative efforts and collective standardizing processes are important.

Ishida (TEL): Exactly. We at TEL have long studied the SEMI Standards, through which we have played an important role in addressing environmental issues and improving productivity. Without such unified standards, different manufacturers would have developed different product specifications, entailing unnecessary costs and substantial waste of resources.

Mikata: SEMI S23 is an example of standardization that is beneficial and user-friendly. By applying the energy coefficients defined by this standard, you can quantify your energy use at every process across the product lifecycle. The resulting numerical data presents a clear picture of which process is the most energy intensive and which process has room for improvement.

Such standardized coefficients cannot be determined without the involvement of semiconductor, equipment and facility manufacturers. Again, collaboration is the key here.

Hoshi (TEL): SEMI S23 has made our life easier as its coefficients allow us to track various energy consumption data centrally. We will be able to develop equipment that can reduce the environmental



impact of facilities if our product developers learn more about the facilities, such as the different coefficients applied to low-temperature cooling water and to high-temperature water resources. Ibuka (TEL): Given the magnitude of the social demand for environmental solutions, we need to establish and achieve ambitious goals: otherwise public trust in the entire semiconductor industry may be eroded. Together, we intend to work closely toward total optimality.

Saito (TEL): Today's discussion led me to think we can still eliminate inefficiencies in clean rooms simply by sharing information in a timely manner, among other factors. With support and insights from various stakeholders, including customers, related device manufacturers and construction companies, we intend to achieve further reductions in the environmental impact of our products and semiconductor factories.

# Following the roundtable meeting ...

In this year's roundtable meeting for our environmental and social report, we invited our customers, manufacturers of semiconductor production equipment components and a construction company that designs and constructs clean rooms to participate, as we did for the last year's publication. We are delighted to have had a constructive and fruitful discussion, which clearly indicated an overall direction for future activities

At the conference of the International Semiconductor Environment, Safety & Health (ISESH) held in Sapporo on June 23, 2008, our Chairman, Tetsuro Higashi emphasized in his keynote speech that the semiconductor industry needs to take collective action in earnest to address environmental issues, particularly global warming, and that industry organizations such as SEMI, International SEMATECH Manufacturing Initiative (ISMI), JEITA and SEAJ need to take initiatives to promote industry-wide efforts. He also declared that the Tokyo Electron Group will operate its business with particular focus on innovation, growth and the environment.

While this roundtable meeting was truly meaningful, solving environmental issues requires more than a single company or country's initiatives but worldwide efforts. I am convinced that in light of this enormous global challenge, corporate social responsibility (CSR) will become of even greater importance for corporations, whether they are large or small.

> Satoshi Saito Environment, Health & Safety Center Tokyo Electron Limited

# **Corporate Governance**

The Tokyo Electron Group continually works to improve its corporate governance practices through various measures to ensure its business is operated in a way that maximizes the Group's corporate value.

# Fundamental Policy Concerning Corporate Governance

The Tokyo Electron Group recognizes the importance of enhancing corporate governance in order to maximize its corporate value for all stakeholders. With this recognition, we are committed to complying with corporate ethics and compliance programs. We are also dedicated to improving and reinforcing internal control and risk management systems, and to maintaining transparency and objectivity in our business activities.

## The Framework of Corporate Governance

We develop and maintain an optimal and effective corporate governance system guided by the following three basic principles:

- 1) ensuring the transparency and soundness of business management;
- facilitating quick decision-making and the efficient execution of business management; and
- 3) timely and suitable disclosure of information.

Specifically, the Board of Directors comprises 14 directors, including three external directors. The Board has two committees to strengthen corporate governance: the Compensation Committee<sup>1</sup> and the Nomination Committee<sup>2</sup>. The term of office for directors is set at one year to allow prompt and flexible responses to changes in the management environment. We have four statutory auditors, two of whom are from outside the company. Statutory auditors attend important meetings including board meetings, evaluate the performance of operational and financial audits and risk management, and audit the performance of directors. In the execution of business, we have introduced the executive officer system to clearly separate the roles of the Board of Directors and of those actually executing business operations. We plan and implement business strategies promptly under this system.

- 1 Compensation Committee: Makes a draft remuneration plan for the Chairman & CEO and the President & COO and presents the draft to the Board of Directors.
- 2 Nomination Committee: Selects candidates for directorships for submission to the annual shareholders' meeting and a candidate to be elected as president by the Board of Directors.

# Internal Controls and Risk Management

We have our Global Audit Center for internal controls. This Center conducts internal audits on business operations, compliance and systems targeting Tokyo Electron Group's bases both in Japan and overseas, and evaluates the effectiveness of the Group's internal control systems. Results of the evaluation may lead to the Center's provision of support for improvements to relevant departments and sites. In addition, the Center makes regular reports to management on the audit results and meets with statutory auditors periodically for information sharing and reporting.

To implement measures to manage risks, including business and operational risks, we have established a department in charge of risk management and this creates and revises in-house rules on risk management and conducts risk-related education and awareness-raising activities.

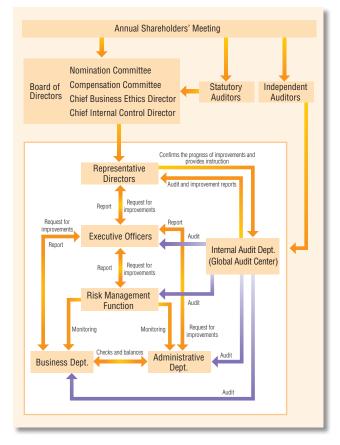
# Establishing Even More Effective Internal Control Systems

We are implementing internal control practices in line with our basic policies on internal controls, which were formulated in May 2006 and partly revised in April 2008. In addition, we are working to meet the requirements of an internal control system for financial reporting under the Financial Instruments and Exchange Act. In June 2008, we appointed the Chief Internal Control Director to further solidify our internal control systems.

#### Internal control systems

- 1. Compliance system
- 2. Risk management system
- 3. System to ensure the appropriateness of financial reporting
- 4. System to store and manage information
- 5. System to ensure the efficiency of business execution
- 6. System to ensure appropriate business operations of the corporate Group
- 7. System to ensure the effectiveness of internal audits

#### Framework for Corporate Governance, Internal Controls and Risk Management



EHS REPOR

# Compliance

The Tokyo Electron Group conducts fair and trustworthy business activities in strict compliance with corporate ethics, laws and regulations.

# Approach to Corporate Ethics and Legal Compliance

Trust is and will always be the lifeline of the Tokyo Electron Group. 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. We give first priority to compliance with high ethical standards and laws in conducting our business operations.

# **Establishing Ethical Standards**

We believe that common standards must be applied throughout our divisions in order to create the globally excellent company that we envision. In 1998, we established a Code of Ethics, which concretely describes our basic views. At the same time, we established the Ethics Committee as an organization for actual operations.

In June 2007, in response to the results of a survey conducted on our Code of Ethics and compliance measures in the Group in 2005, we revised our Code of Ethics, including adding items and modifying expressions, to make them easier to understand and more consistent with the current business environment and sense of ethics.

#### The Code of Ethics of Tokyo Electron Group Introduction

I. Principles

- 1. Compliance with Applicable Laws
- 2. Acting in Accordance with Social Conscience
- 3. Maintaining Harmonious Relationships with Local Communities
- II. Honest and Fair Business Activities
  - II-1 Technology, Safety and the Environment
    - 4. Ensuring Safety and Pursuing Quality
    - 5. Promoting Environmental Preservation Activities
    - 6. Ethics in Manufacturing
  - II-2 Fair Trade
    - 7. Implementing Fair and Open Competition
    - 8. Fair Business with Suppliers
    - 9. Handling of Confidential Information
    - 10. Strict Export/Import Controls
    - 11. Reasonable Exchanges of Gifts and Entertainment within the Bounds of Common Sense
  - II-3 Relationship between the Company and Individuals
    - 12. Prohibition of Conduct Causing Conflicts of Interests
    - 13. Prohibition of Improper Use of Company Assets
    - 14. Prohibition of Conduct of Harassment
- III. Being a Good Corporate Citizen
  - 15. Prohibition of Insider Trading
    - 16. Prohibition of Political Activities and Contributions
    - 17. Prohibition of Involvement in Antisocial Forces
    - 18. Respect for Individuals

Implementation of the Code of Ethics<sup>1</sup>

1 The "Implementation" section provides specific matters and procedures.

To facilitate in-depth understanding of the Code of Ethics, we also revised the booklet describing the Code of Ethics and the provisions thereof in a question-and answer format, and we distributed the booklet to each of the directors and employees of the Group.

# Measures to Strengthen the Compliance System

We established our Compliance Regulations in 2004 (and revised some provisions in 2008). The Regulations, which provide for basic matters concerning compliance, are designed to help those engaged in the business operations of the Tokyo Electron Group to understand fully the relevant laws, regulations and international rules as well as in-house rules, and act accordingly at all times.

We also have a hotline (internal reporting system) for employees and others to report questionable actions in light of the Code of Ethics, applicable laws, regulations and other relevant rules.

Reported concerns are handled by the director in charge of ethical matters and the chairman of the Ethics Committee (on the matters regarding the Code of Ethics) or by the Director of the General Affairs Department in a fair and sincere manner with due whistleblower protection.

We provide compliance-related information on the Company intranet and give employees web-based education to ensure that they all understand our compliance policies and are more aware of their importance, thereby further strengthening our compliance system.

# **Protection of Personal Information**

Leakage of personal information has become a major social concern in recent years and companies are required to manage the personal information they hold in an appropriate manner.

In Japan, following the enforcement of the Act on the Protection of Personal Information in April 2005, the Tokyo Electron Group formulated its basic policies, rules, and guidelines for the protection of personal information and developed related manuals and other documents. We provide web-based training programs to educate employees on the implementation of such policies and rules and raise their awareness of these policies and rules by providing relevant information via the intranet. Furthermore, in Japan we investigated personal information stored on PCs leased to employees to understand the current status of how personal information is being treated.

We also take a range of measures to ensure proper management of personal information such as with the installation of exclusive servers that store personal information only; by controlling access to PCs for employees' individual use with IC cards; periodical changes of passwords; introduction of encryption; and use of auxiliary storage devices with password-based access control.

# **EHS Management**

# Environment, Health, and Safety (EHS) activities are always an important priority for the Tokyo Electron Group.

## **Basic Idea behind EHS Activities**

The Tokyo Electron Group recognizes caring for people's health and safety and the global environment as top priorities for its business. We are therefore committed to being a company capable of earning the trust of all involved in our business operations. We also believe

#### The Tokyo Electron Group Credo and Principles on Environmental Preservation

#### The Tokyo Electron Group Credo on Environmental Preservation

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

#### The Tokyo Electron Group Principles on Environmental Preservation

1. Continuous Improvement The Tokyo Electron Group is conscious that products manufactured by the Group affect the environment, and based on this awareness, we, with our customers and suppliers, shall continually strive to minimize the impact of processes and operations on the environment. We will develop products consistently with a clearly defined environmental roadmap for all Group products, verifying the appropriateness of efforts during design, manufacture and use. To further confirm the appropriateness of such efforts, we will undertake activities that fully take into account regulatory and industry requirements and the needs of customers and other stakeholders 2. Knowledge

- The Tokyo Electron Group continually strives to enhance its understanding of the impact that the Group has on the environment and the responsibility that this entails In addition, the Group aims to gain a quantitative grasp of environmental factors, and the impacts resulting from its activities and operations.
- 3. Performance Criteria In addition to strict adherence to environmental laws, treaties and agreements, the Tokyo Electron Group will also promote conservation of the global environment by formulating activity plans that take into account industry standards and various other environmental requirements.
- 4. Disclosure
- In addition to ensuring that all employees clearly understand our environmental concepts, policies, the state of company contributions toward environmental protection and the state of product-related environmental efforts, as well as improving levels of awareness, we will disclose relevant information to those outside the Company via environmental reports and other means.
- Partnership The Tokyo Electron Group actively participates in environmental protection activities practiced by its customers, suppliers and communities

May 26 2006

that EHS activities will lead to long-term benefits for the entire Group. As a responsible member of society, we strive to help develop a more affluent society through our EHS activities.

#### The Tokyo Electron Group Safety and Health Credo and Principles

#### The Tokyo Electron Group Safety and Health Credo

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

#### The Tokyo Electron Group Safety and Health Principles

Continuous Improvement The Tokyo Electron Group is conscious that the factors that affect the safety and health of customers and its employees exist at the stage of manufacturing, transportation, installation, use, maintenance and service of its products. Based on this awareness, we shall continually strive to improve the safety and health of our products and eliminate factors that potentially affect human health.

 Knowledge The Tokyo Electron Group continually strives to enhance its understanding of safety the conditions for all neople working at its sites. To that end, the Group aims to gain a qualitative and quantitative grasp of safety and health factors on its activities and operations.

3 Performance Criteria As well as strictly observing mandatory safety and health laws, treaties and agreements, the Tokyo Electron Group 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 The Tokyo Electron Group shares information about its safety and health credo, policies and the progress of its safety and health activities with all board members and employees, and will publish its progress to the general public as the need arises.

 Partnership The Tokyo Electron Group participates in safety and health activities practiced by its customers, suppliers, and communities.

November 27, 1998

#### Environment and Safety Activities Milestones of the Tokyo Electron Group

May 1994	Standardization, Environment and Safety Center (Environment, Health & Safety Center) established	Apr. 2000 Apr. 2000	Environmental accounting introduced Unified safety training system "Safety 2000"
Mar. 1996	Product Safety Subcommittee (Tokyo Electron Group		implemented
4000	Product EHS Technical Committee) launched	Dec. 2000	First Tokyo Electron Group environmental report
Apr. 1996	Environmental Subcommittee (Tokyo Electron Group EHS Committee) launched	Oct. 2001	published Environmental training introduced in facilities not vet
Dec. 1997	Sagami Plant acquires ISO 14001 certification (and	061. 2001	certified under ISO 14001
	subsequently other plants also acquire the certification one after another)	Dec. 2002	Tokyo Electron Group Internal Assessment mutual auditing by environment or safety representatives from
Sept. 1998	Tokyo Electron Group Credo and Principles on		each facility started
N 4000	Environmental Preservation established	Oct. 2005	Energy-Conservation Task Force starts activities to
Nov. 1998	Tokyo Electron Group Credo and Principles on Safety & Health established	May 2006	promote energy-saving products
Jun. 1999	Safety First policy established	May 2006	Tokyo Electron Group Credo and Principles on Environmental Preservation revised
Dec. 1999	"Health, Safety, and Environment" added to the Management Philosophy	Oct. 2007	Environmental Steering Committee, the highest-level environmental function at TEL, launched

SOCIAL REPOR

EHS REPOR

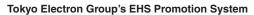
HIGHLIGHTS

# **EHS Promotion System**

Our EHS activities are conducted with respect to three core elements: 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 Plant and Office EHS, which concerns our facilities.

The Tokyo Electron Group companies, in particular TEL's manufacturing subsidiaries, started developing and implementing environmental management systems based on ISO 14001 in 1997, and obtained ISO 14001 certification.

Recognizing the widening necessity of addressing present global warming and climate change, we also established the Environmental Steering Committee in October 2007 to intensify and accelerate our "green" efforts. The Committee is the Group's highest-level organization responsible for our environmental activities (please refer to page 18.)





#### ISO 14001-Certified Plants and Offices

Company name	Plant/Office name	Certification date	Certification number		
Tokyo Electron PS Limited/ Tokyo Electron AT Limited	Sagami Plant	December 10, 1997	1110-1997-AE-KOB-RvA Rev.1		
Tokyo Electron Tohoku Limited	Inhoku Plant 1118-1998-AE-KOB-BVA		1118-1998-AE-KOB-RvA		
Tokyo Electron Kyushu Limited	Kumamoto/Koshi/ Ozu/Saga Plants	March 26, 1998	1120-1998-AE-KOB-RvA		
Tokyo Electron AT Limited	Yamanashi Plant (Fujii/Hosaka district)	May 15, 1998	1124-1998-AE-KOB-RvA		
	Miyagi Plant	March 1, 2005	01245-2005-AE-KOB-RvA		
Tokyo Electron Device Limited	Yokohama Office	July 14, 2004	EC04J0144		

## **EHS Activities Monitoring System**

In order to increase the effectiveness of our EHS management system, we continually increase the level of monitoring that verifies the system function and results. Monitoring is done from multiple viewpoints within plants and offices, within the Group, or by third parties.

We are especially focusing on the Tokyo Electron Group Internal Audit, a program of mutual EHS evaluations by representatives of many plants and offices, which was instituted in fiscal 2003. In fiscal 2007, in response to an increasing need to manage chemical substances contained in products across the entire supply chain and in compliance with the Japanese Industrial Safety and Health Act revised in 2006, we added some new audit items to ensure that EHS was examined appropriately in cooperation with our suppliers and partner companies. (The revised law demands the enhancement of safety instructions and messages to be given by a primary employer<sup>1</sup> to the related contractors.) We will continue to monitor our EHS management system with this extended scope, which checks our EHS activities more strictly.

1 Primary employer: According to the revised Industrial Safety and Health Act, a primary employer means a primary company that arranges for the employees of its contractors to carry out a part of the company's work at one single place in cooperation with the company's own employees.

## EHS Risk Management System

At manufacturing subsidiaries of TEL, environmental and safety risks are estimated based on ISO 14001 and OHSAS 18001 standards for labor safety and health management systems. These subsidiaries are implementing measures to eliminate higher risks first. Also, they are



endeavoring to reduce some risks although they are not yet legally required to do so. We believe it most important to implement anti-global warming measures in line with the Kyoto Protocol targets in future EHS risk management.

Our Tohoku Plant was certified by Iwate Prefecture as a "four-star" (highest-rating) environmentally friendly office in recognition of its tangible activities and performance toward the reduction of CO<sub>2</sub> emissions.

Label for certified environmentally friendly offices, granted to the Tohoku Plant

## Abiding by the Law

The Tokyo Electron Group operates in strict compliance with 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 fiscal 2008, we were not subject to legal actions of any kind with regard to environmental accidents, violations, fines or complaints.

## **EHS** Training

The Tokyo Electron Group offers EHS training based on the policy of "the necessary training for the necessary people." Training courses are grouped by rank and are open both to Group employees and to employees of cooperating companies who work at the Group's facilities. An EHS training program is also a required part of the curriculum for new hires.

In 2007, we launched the Company intranet to communicate

environmental-related information, such as examples of successful related activities within the Group, messages from top management and meeting materials.



TEL's intranet site

# EHS Management

The Tokyo Electron Group will go the extra mile for the environment under the slogan "Technology for Eco Life."

# Acceleration of Environmental Activities

## Launch of the Environmental Steering Committee

Recognizing the increasing necessity of addressing global warming and climate change, we established the Environmental Steering Committee in October 2007 to intensify and accelerate our green efforts. This highest-level internal organization on environmental activities is comprised of the executive officer in charge of development, and members from the marketing, corporate strategic planning and corporate communications departments.

The Committee has two working teams: the Product Working Team and the Office/Logistics Working Team, which explore what we can and should do for the environment with regard to the Group's products as well as our offices and distribution practices, respectively. Under the slogan of "Technology for Eco Life," the Environmental Steering Committee plans to formulate standards and roadmaps in fiscal 2009, and this will be designed to achieve TEL's environmental commitments.



Slogan and logo below were selected from employees' ideas.

# **Technology for Eco Life**



Tokyo Electron supports a strong global community and strives to achieve a society in harmony with the environment.

We are committed to creating an environmentally-benign society together with our customers by providing advanced technologies and services.

# **Tokyo Electron's Commitment**

- We aim to develop equipment that enables a 50% reduction—compared to the 2007 levels—of the total environmental impact of new customer factories scheduled for completion in 2015 or later.
- We aim to reduce the impact of our business and transportation activities on the environment by 50%, by 2015, compared to the 2007 levels.
- We will strive to achieve these commitments in partnership with our stakeholders.

(Thousands of ven)

(Thousands of yen)

# EHS Activity Goals and Results/ Environmental Accounting

# The Tokyo Electron Group has set goals for EHS activities and is promoting those activities throughout the Group.

# **Goals and Results for EHS Activities in FY 2008**

	Action item	Goals for FY 2008	Results	Achievement level	Plans and goals for FY 2009 onward	Page in report
EHS management	EHS internal audit	Perform EHS internal audit at plants and offices across the supply chain	Conducted an audit at one site adding a supply chain-related audit item and made corrections based on the findings.	0	Continue to conduct audits	P.17
	_		Encouraged application to existing equipment	0	Develop standards and operate	
Product initiatives for	Energy-saving equipment	Achieve the TEL Roadmap' indicators	300-mm products: Achieved the fiscal 2008 targets for two products out of six, and working to achieve 2010 targets	$\bigtriangleup$	related activities to achieve commitments under the Technology for Eco Life slogan	P.20-23
the environment M t	Measures to reduce the use of regulated chemical substances in equipment	Achieve the TEL Roadmap indicators	Made progress in conducting survey on six substances designated under the RoHS Directive and replacing with alternatives that do not contain such substances	0	Preparation and response with regard to the initial shipment in the second half of fiscal 2009	P.24
		Reduce energy consumption (1% decrease in CO <sub>2</sub>	Achieved the goal of decreasing $\text{CO}_2$ emissions per unit of sales by 1% from the fiscal 2007 level	0	Develop standards and roadmaps, and operate related activities to achieve the aforementioned commitments	P.28
Environmental activities at each plant or office	Saving energy	emissions per unit of sales, as based on the Act Concerning the Rational Use of Energy)	Obtained accurate data on domestic logistics and promoted modal shift	0	Develop standards and operate related activities to achieve the aforementioned commitments; study on transportation system for exporting products	P.25
	Waste reduction	Continue zero emission efforts at manufacturing plants	Achieved zero emissions at all manufacturing plants The recycling rate of the entire Group was as high as that of the previous fiscal year	0	Continue zero emission efforts and examine reduction in the total amount of waste	P.30
Health and safety	Reduction in the number of injury accidents	Reduce the number of injury accidents by 30% from the FY 2007 level	Achieved the target by reducing the number of injury accidents by 40% or more from the fiscal 2007 level	0	Target a 25% reduction of injury accidents in fiscal 2009 from the fiscal 2008 level	P.32

1 TEL Roadmap: Environmental policies and plans for the Group's products 🔿 Achieved target 🛆 Achieved 80% of target 🛛 Achieved less than 80% of target 🚽 Item for which no goal was set

# **Environmental Accounting**

Scope: Major plants and offices in Japan (in Sapporo, Tohoku, Miyagi, Akasaka, Fuchu, Yokohama, Sagami, Hosaka, Fujii, Amagasaki, Osaka, Saga, Kumamoto, Koshi, and Ozu) Period covered: April 1, 2007 to March 31, 2008

We conduct environmental accounting according to Environmental Accounting Guidelines 2002 and Environmental Accounting Guidebook II issued by the Japanese Ministry of the Environment.

## **Environmental Protection Costs in FY 2008**

With Minerital Protection Costs in 11 2000			(Thousanus of yen)		
Item	Main initiatives	Capital investment	Expense		
1. Business area cost		476,881	657,730		
1.1 Pollution prevention costs	Prevention of air pollution, water pollution, soil pollution, etc.	385,561	346,867		
1.2 Global environmental costs	Prevention of global warming, protection of the ozone layer, etc.	91,320	77,233		
1.3 Resource circulation costs	Efficient use of resources, reduction of waste, etc.	0	233,630		
2. Upstream/downstream costs	Green purchasing, green procurement, etc.	0	641,673		
3. Management activity costs	Environmental education, monitoring and measurement of environmental impact, etc.	22,705	219,168		
4. Research and development costs	Product R&D, etc.	0	1,741,927		
5. Social activity costs	Tree planting and vegetation, supporting of local environmental activities, information disclosure, etc.	0	38,107		
6. Environmental damage costs	Repairing of damage to the natural environment, etc.	0	0		
7. Other costs	Other	0	0		
Total		499,586	3,298,605		

#### Economic Benefits of Environmental Protection Activities in FY 2008

Classification of environmental costs		Details	Amount
	• Benefits related to electricity and other energy	Reduced electricity usage (e.g. benefit from suspending new facility-construction plan)	-16,484
	<ul> <li>Water-related benefits</li> </ul>	Reduced water usage (e.g. circulating of cooling water)	-7,777
	<ul> <li>Paper-related benefits</li> </ul>	Reduced paper usage (e.g. encouragement of duplex copying and use of electronic media)	-1,032
Cost reduction	<ul> <li>Resource-related benefits</li> </ul>	Reduced use of heavy oil and gas	-2,560
loudotion	Other benefits	Reduced use of liquid nitrogen and copying toners	-9,730
	<ul> <li>Waste-related benefits</li> </ul>	Reduced waste volume	91,636
	Benefits related to release into waters and soil	Reduced release into the sewage system	-104
Total			53,949

# **Product-Related Initiatives for the Environment**

The Tokyo Electron Group works hard to reduce the impact of its products on the environment through various improvement measures, such as reducing energy requirements of our semiconductor and FPD production equipment and minimizing the use of regulated chemical substances.

# Designing Products that have Less Environmental Impact in Use

# Our Approach to Reducing the Environmental Impact of Our Products

We believe it is important to promote environmentally conscious designs, as we have clearly stated in the Tokyo Electron Group Credo and Principles on Environmental Preservation. We give top priority to the provision of energy-saving equipment and to reducing or finding alternatives for the regulated chemical substances contained in our products.

## **Organizations for Reducing Environmental Impact**

Two working groups are in place to promote our efforts to reduce the environmental impact of our products: the Chemical Substances Steering Team and the Product Working Team. The former works to reduce or substitute the use of chemical substances subject to applicable regulations in our equipment parts and components. The latter was established under the Environmental Steering Committee in fiscal year 2008. Under the leadership of the Product Working Team, each business unit has developed a roadmap to reduce their environmental impact. In preparing the roadmap, business units were required to cover the following mandatory items: reducing energy requirements in our products, addressing chemical substance-related

## Items in the Environmental Road Map by Each Division

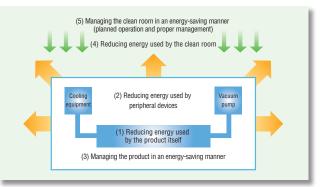
- (1) Reducing the energy requirements in our products
- (2) Addressing chemical substancerelated matters
- (3) Reducing the number of parts and processes required
- (4) Reducing the use of processing gases and liquid chemicals
  (5) Improving the environmental performance of existing equipment

matters, reducing the number of parts and processes required, reducing the use of processing gases and liquid chemicals, and improving the environmental performance of existing equipment. In addition, they were encouraged to cover voluntary items such as reducing the number of processes required for equipment installation. In the design and development process, we also consider and implement, where possible, the reduction of required materials and the number of processes involved. Progress of the defined goals will be reviewed in the Group's mid- and long-term plan.

#### **Energy-Saving Measures for Products**

We are examining measures to reduce the energy that our products consume when they are used and have set the following five targets: (1) reducing energy used by the product itself; (2) reducing energy used by peripheral devices; (3) managing the product in an energy-saving manner; (4) reducing energy used by the clean room; and

#### Approach to Energy Saving of the Products



# TOPICS

# **Recycling of Replaced Components**

In the past, we disposed of faulty equipment components we produced. We opted not to recycle faulty components due to their peculiarities and quality concerns. In order to use resources more effectively and reduce disposed waste, we have explored ways we could change this practice. Now, old components replaced during the equipment warrantee period are collected and inspected by our Group. If components are found to be reusable or recyclable, they are refurbished and reused. In shifting to this new policy, we established a quality standard for inspections that requires the same level of inspection for used components as for new components, and the detection of any noticeable degradation or abrasion, among others. In addition to resource saving and waste reduction, the revised practice brings another benefit: the results of any repairs undertaken can provide insight into creating longer-lasting products and to reduce stock levels and maintenance costs. This collection and recycling program is currently only available in Japan but will be extended to overseas markets in the future to achieve further reduction of waste and improved resource consumption.

#### Flow of Replaced Recycling Process



(5) managing the clean room in an energy-saving manner (planned operation and proper management). For energy-saving management of the clean room, we are required to cooperate with customers and facility manufacturers. Such close cooperation will allow us to make further efforts to reduce the energy consumed by our products while they are in use. In addition, we will identify how much energy our products and their supplementary devices (e.g. vacuum pumps and cooling equipment) consume in reference to the SEMI S23 standard, and monitor the consumption of electricity as well as the consumption of water, dry air, cooling water and exhaust heat, and take appropriate measures.



We strive to contribute to both the workplace and the global environment by developing equipment of even higher quality.

# Masami Akimoto

Senior Vice President, Deputy General Manager, Development & Manufacturing Division Tokyo Electron Limited

When developing equipment and products, satisfying our customers' requests for excellent product performance and reducing the environmental impact of our products are inseparable objectives.

I have been engaged in development of the Group's products since I joined the company in 1984. While "environmental consciousness" and "global warming prevention" are frequently used phases these days, concern for the environment has long been a basic element of our product development. Meeting customer needs by producing equipment with shorter wait times, low energy consumption, higher utilization and higher yield is indeed synonymous with reducing the environmental impact of our products.

For example, reducing the use of liquid chemicals in manufacturing semiconductors/FPDs is not only about the environment but also about cost performance and process efficiency. This recognition drove us to make a variety of improvements such as changing our coating methods to reduce the use of liquid chemicals and recycling used liquid chemicals with a high collection rate. Such improvements over the years have resulted in higher production efficiency, requiring less energy and resource consumption.

# We aim to reduce the environmental impact of both new and existing products.

We are developing next-generation models of our products in collaboration with customers to meet extremely high requests for equipment that has less of an impact on the environment. At the same time, we are implementing environmental improvements to existing products installed at customer sites. Once shipped from our factory, our semiconductor production equipment will be in use for a long time, generally speaking, for 15 to 20 years. Tens of thousands of units of our equipment are in operation worldwide. We must retrofit them to reduce their environmental impact and extend their product life. We have started to provide this modification service in earnest with the launch of a Post-Sales Division this year.

#### Collaboration among engineers as well as good physical and mental well-being is needed to take our development capabilities to the next level.

In pursuit of the development of equipment that is even more environmentally-friendly, we need a forum to build a network of engineers, share experience and expertise, and discuss basic technologies and research methodologies, in addition to individual R&D efforts at each business unit. From an initiative launched last year, we now hold a quarterly gathering of engineers, enabling us to hold in-depth peer-based discussions and utilize the technological expertise of other departments. In an increasing number of new product development projects, cross-departmental project members are solicited and selected.

In tandem with enhancing our R&D capabilities, we are promoting a better work-life balance for our employees. Good physical and mental health is a powerful enabler of outstanding performance. We are particularly working to slash overtime work hours, so far generating good results. For instance, one department's monthly average overtime work hours has declined by about 60%.

Excellent performance of the equipment we develop leads to better performance for its users and providers and their respective organizations, and in turn greater profits for the companies. Reliable, stable equipment can be a helpful partner in customer production activities. Furthermore, it will substantially ease the burden on our Group's field engineers.

We will continue striving to develop high-quality equipment both in terms of functionality and environmental performance.

# **Product-Related Initiatives for the Environment**

# **Preventing Global Warming**

# Initiative for Coater/Developer CLEAN TRACK™ LITHIUS Pro™

A coater/developer is used to coat photoresist and develop the exposed pattern simultaneously in the lithography process (where the same photo development technology is applied) in manufacturing semiconductors. When we developed the CLEAN TRACK LITHIUS Pro coater/developer by redesigning our 300 mm wafer CLEAN TRACK<sup>™</sup> LITHIUS<sup>™</sup>, we concurrently worked to reduce the environmental impact of the overall LITHIUS series. Specifically, we adopted a new exhaust system for hot plate chambers which directly uses exhaust air from the factory. We previously exhausted air by using compressed-air powered ejectors. This shift enabled us to reduce the use of compressed air by 35% or more compared to the previous system. We also worked to achieve a proper volume of nitrogen gas purge in this coater/developer, resulting in at least a 70% reduction in the use of nitrogen gas. Through these improvements, the revised models' energy requirement per unit area of wafer was reduced by approximately 20%. When developing the new LITHIUS Pro, we incorporated energy-saving features, such as introducing an inverter-equipped automatic control system for the humidifying heater and the freezer within the temperature and humidity controller, and reducing the number of pumps used. As a result, LITHIUS Pro requires 32% less electricity than the initial LITHIUS model. Its energy use per unit area of wafer was also slashed by 35% from the existing LITHIUS model. We will continue to incorporate a greater number of energy efficient designs in all new products and adopt such "green" features for existing models.

#### Comment from an Employee



Meeting Expectations to Improve Energy Efficiency from the Development Stage

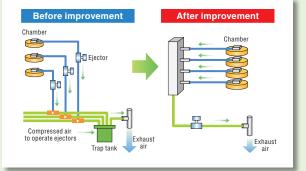
## Keiichi Yahata

Safety Technology Section, CT System Design Dept. Tokyo Electron Kyushu Limited

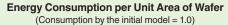
In recent years, our customers have requested equipment with evergreater energy efficiency. As semiconductor production equipment is high-precision machinery, modifying its design after completion or at a later stage involves significant risk and requires tremendous effort in terms of risk assessment. This means it is important to consider energy efficiency in the product development stage.



#### Improvement of Exhaust System of Hot Plate Chambers



The shift of chamber exhaust system from an ejector-based method to a direct exhaust method eliminated the use of ejectors and compressed air for ejectors.





#### Initiative for FPD Coater/Developer

A FPD coater/developer is used to apply photoresist on FPD substrates and develop the exposed pattern. This equipment—which contains coating, developing, and drying units—becomes increasingly larger as the substrates it processes expands. Our Exceliner™ is an example of this type of large model and we aim to reduce its environmental footprint through a variety of improvements, even during the product concept development phase. For instance, the scrubber unit for washing substrates reuses a maximum of 3,000 cubic meters of pure water used for rinsing in the pre-washing process. In addition, more than 90% of its used developing agent is recycled and the coating method for photoresist has been changed from spin-coating to slit-coating. In this way, this equipment now requires more than 90% less photoresist.

HIGHLIGHTS

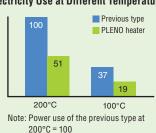
# Modification of Thermal Processing Systems to Reduce Energy Consumption

Some of our thermal processing systems use exhaust pipe heaters to prevent byproducts and other substances from adhering to the inside surface of the chamber. The electricity consumed by the pipe heaters has been reduced by 40 to 50% by installing PLENO heaters which have a higher-insulation performance than previously used silicon rubber pipe heaters. The PLENO heaters are made from porous PTFE,\* which means this unit is cleaner, suffers little degradation and thus has a probable longer product life.

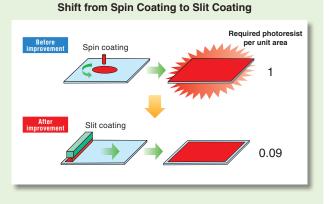
\*PTFE: polytetrafluoroethylene (PTFE) is a fluorocarbon resin consisting of fluorine and carbon.



PLENO heater
Electricity Use at Different Temperatures



ALPHA ( $\alpha$ )-303i to be modified

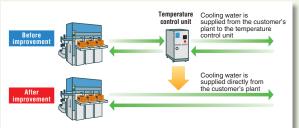


# Initiative for Single Wafer Deposition System Trias™

A single wafer deposition system is used to form metal and barrier films by using thermal and plasma energy. This system adopts a chemical vapor deposition (CVD) process, whereby a gaseous mixture of reactive chemicals is supplied in the chamber and then heated. As a result of this chemical reaction, thin layers are formed and deposited.

Previously, cooling water was supplied to the system from a dedicated temperature control unit installed outside the system. However, we noted that this external device accounted for a large portion of the overall environmental impact of the system and consulted with our customers to find a solution to reduce its energy requirements. We learned that the cooling water systems of customers' factories can be directly supplied to a single wafer deposition system in a consistent manner. We therefore decided to modify the system to be suitable for the new cooling water supply method which does not need a separate temperature control unit. This shift led to a reduction in energy use and installation space. As proof of the success of this measure, we received an award from a customer in recognition of our environmental initiative.

## Discontinue Use of a Dedicated Chiller



## Comment from an Employee



Creating Environmentally Friendly Products through Extensive Discussions with Customers Mitsumasa Kubota

Second Group, SD Design Engineering Dept. Tokyo Electron AT Limited

The elimination of the temperature control unit is the result of extensive discussions with customers and many attempts to improve the equipment. We will continue striving to develop environmentally friendly products and new green technologies.

# **Product-Related Initiatives for the Environment**

# **Management of Chemical Substances**

# Our Activities toward Reducing the Use of Regulated Chemical Substances in Products

Against the backdrop of growing concerns over the impact that harmful substances contained in parts and materials have on the environment and eco system, many countries have worked to regulate the use of such substances in automobiles and electrical products. The Tokyo Electron Group is making appropriate responses to these movements. For example, with regard to the RoHS Directive<sup>1</sup> that took effect in July 2006, we issued a written statement demonstrating that the semiconductor and FPD production equipment manufactured by our Group falls outside the scope of the Directive because they are large-scale stationary industrial tools, to which the Directive does not apply. This statement also specifies the rationales of our judgment.

We have already met all requirements of China's RoHS<sup>2</sup>, which became effective in March 2007. In order to meet the regulatory requirements of relevant countries in a prompt manner, we established a Chemical Substances Steering Team, which comprises representatives from TEL's headquarters and its manufacturing subsidiaries. The team collects and shares information and investigates the use of regulated chemical substances in our products and advises us, in cooperation with our suppliers, when to replace products containing these substances with alternatives. Despite the fact that our semiconductor/FPD production equipment is not regulated by the EU's RoHS, we voluntarily developed a timetable in fiscal year 2007 to phase out the use of the six regulated substances used in our products (excluding certain products). We are scheduled to start shipping products that meet EU RoHS standards in stages from the second half of fiscal year 2009.

- 1 RoHS: Restriction of the use of certain Hazardous Substances in Electrical and Electronic Equipment
- 2 China's RoHS: Officially called "Management Methods for the Prevention and Control of Pollution from Electronics Information Products"

#### **Chemical Substances to be Reduced**

	First Priority
Cadmium	Pigments, stabilizers, and resins
Hexavalent chromium	Chrome plating
Lead	Solders, paints, electrical wire coating, and free-cutting metal
Mercury	Batteries and fluorescent lamps
PBBs	Resin parts
PBDEs	Resin parts
	Second Priority
Substances designated as (We have already implem	s Level A substances in JIG* ented measures for many of these substances.)
(JIG) was prepared by Jap The Guide lists the chemic implemented. It classifies as Level A substances, inc	for Material Composition Declaration for Electronic Products anese, American and European private trade associations. al substances for which conservation measures should be the substances into Level A and Level B: 16 substances are listed luding cadmium, hexavalent chromium, lead, mercury, PBBs, and stances are listed as Level B substances.

# Response to China's RoHS

China's RoHS, which became effective on February 28, 2007, is

intended to regulate the use of chemical substances in electronic information products sold on the Chinese market. The Tokyo Electron Group has already taken the necessary actions in response to this regulation, which requires compliance with the following two rules.

#### **1. Product Labeling**

Products containing chemical substances regulated under China's RoHS must carry a label showing the period during which the product can be used in an environmentally safe manner. The Tokyo Electron Group generally sets this period at 25 years.

2. Disclosure of Information on the Use of Chemical Substances Information on the use of products containing regulated chemical substances should be disclosed in the product's instruction manual and similar documents in the Chinese language. The Tokyo Electron Group strictly complies with this rule.

# System to Reduce the Use of Regulated Chemical Substances

The Tokyo Electron Group operates a chemical substances management system based on the principle of not using, purchasing or selling parts containing regulated chemical substances at more than regulatory specified levels. This system is used to register and refer to information on the use of chemical substances in various parts. This system allows us to check with ease whether parts to be used in our products contain regulated chemical substances or not and controls the manufacture or shipment of products containing these substances.

## **Future Regulations on Chemical Substances**

In Europe, under regulations such as REACH<sup>1</sup> (which mandates safety evaluations of almost all chemical substances sold on the market and registration of the relevant information), the new Batteries Directives<sup>2</sup> and the PFOS<sup>3</sup> Directives, companies will be increasingly required to fulfill their responsibilities as a manufacturer and follow the precautionary principle. All Tokyo Electron Group departments, from those engaged in product development and design, manufacturing, materials procurement, quality assurance, and environment and safety are making concerted efforts to comply with these regulations. We will also explore optimal management of chemical substances by joining the activities of JAMP<sup>4</sup> and other forums.

- 1 REACH: Registration, Evaluation, Authorization and Restriction of Chemicals
- 2 The EU's new Batteries Directive regulates the disposal of batteries which are collected from used electronic and electric devices in compliance with WEEE. It also requires labeling with a designated recycling mark to facilitate collection and recycling.
- 3 Perfluorooctanesulfonic acid (PFOS) is used as a water repellent and waterproof coating and in producing flame-resistant greases and oils. The EU's directive, effective June 27, 2008, prohibits the use of PFOS in quantities larger than those designated, with some exceptions.
- 4 JAMP: Joint Article Management Promotion-consortium

# **Environmental Initiatives in Transportation**

At the Tokyo Electron Group, implementing environmental measures in transportation processes is a top priority. We are committed to reducing our environmental impact and promoting the effective use of energy and resources in our transportation activities.

## **Our Approach to Environment-Friendly Logistics**

In April 2006, Japan's Act Concerning the Rational Use of Energy (Energy Saving Act) was revised and regulations on logistics were strengthened with the aim of reducing global warming. Accordingly, there are now increasing demands to reduce the environmental impact of logistics. In response, the Tokyo Electron Group has been actively reducing the environmental impact caused by the logistics of its products. For example, we introduced low emission trucks to

transport our products and started to recycle unused lumber from packaging frames. We also give top priority to driving safety in delivering products to customers.



Recycling lumber from packaging frames

# **Environmental Impact of Logistics**

The Revised Energy Saving Act designates shippers who transport 30 million ton-kilos or more a year as specified shippers. They are requested to reduce the  $CO_2$  emissions resulting from transportation of their cargo.

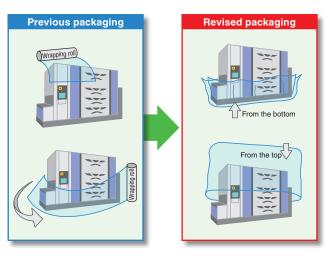
In fiscal year 2007, TEL was designated a specified shipper under the Energy Saving Act as its non-consolidated freight transportation (weight of major products transported multiplied by their transportation distance), calculated based on a given loading ratio, exceeded 30 million ton-kilos. In fiscal year 2008, we successfully reduced our freight transportation below the 30 million ton-kilos threshold as a result of our efforts to collect cargo weight data more precisely by measuring the gross weights of about 95% of our major products and deriving relevant information from design data. We thus applied to be de-listed as a specified shipper under the Energy Saving Act.

In fiscal year 2008, TEL's transportation activities in Japan emitted 4,712 tons of  $CO_2$  (non-consolidated). During this fiscal year, the cross-departmental Office/Logistics Working Team was launched under the Environmental Steering Committee to study future steps to reduce the environmental impact. Key focuses of this working team include the promotion of a modal shift\* such as increasing the use of vessels for product transportation in Japan. At present, the majority of our exports are transported by aircraft in accordance with customer instructions, which generates an estimated 20-fold more  $CO_2$  emissions than domestic land or sea transportation. We will work to find further ways to increase exports by ship in order to achieve our emission reduction targets.

\*Modal shift: A shift from conventional freight transportation by truck to marine and rail transportation for mass transport

#### Green Packaging

Products of the Tokyo Electron Group are precision machines. Because of this nature, delivering our products requires special packaging so as to maintain their precise and clean condition. We previously wrapped our products two or three times with transparent plastic. But there was a downside to this packaging method: wrapping was rather difficult and created unnecessary space between the packaging material and the products. To address these problems, our coater/developer department studied and improved our packaging process. In the revised packaging process, we cover products to be shipped with a pair of specially ordered sack-shaped wrapping materials from the top and bottom. This shift has allowed us to overcome the aforementioned shortcomings and reduce the use of packaging material by 30%. It also involves fewer activities in high places, resulting in a more efficient packaging process that requires three times fewer man-hours. We intend to make further improvements to reduce the environmental impact and man-hours.



Comment from an Employee



Active Promotion of Modal Shift

Kiyoshi Shimizu Logistics System Division 1 Tokyo Electron BP Limited

In fiscal year 2008, we began to use ships rather than trucks to transport our products. About 150 trucks were replaced by marine transportation for two routes. An estimated 93 metric tons of CO<sub>2</sub> emissions has been saved by this modal shift. We will work to make further progress in this effort. In parallel, we will work to reduce the environmental impact of packaging material and other related elements.

# **Environmental Initiatives of Our Suppliers**

# The Tokyo Electron Group collaborates with its suppliers to reduce the environmental impact of its products.

The following describes initiatives taken by two of our suppliers to reduce their environmental impact.

# Environmental Initiatives of Our Suppliers—Fujikin Incorporated

# **Fujikin Incorporated**

Fujikin Incorporated and its affiliates are leading manufacturers of valves and flow control systems. Since its foundation in 1930, Fujikin has offered products that are used in a wide range of applications, such as aerospace equipment, ocean development, chemical processes and nuclear power plants. Fujikin was granted the Manufacturers' Award for four straight years in recognition of its technological excellence. The Tokyo Electron Group sources valves, connectors and flow control systems from Fujikin.



Fujikin provides outstanding service through its technical support units located at our manufacturing sites as well as customer service centers worldwide.

Precision valves for semiconductor manufacturing\*

\* In semiconductor/FPD production equipment, valves are used to control trace gases precisely and their contamination with even minute particles can lead to extensive problems. Fujikin inspects every valve to detect any leakage or particle contamination in order to maintain the high quality of its products.



Super clean room

# **Environmental Management System**

Fujikin operates with an environmental philosophy of, "preserve our beautiful planet, be kind to people, cherish our products, be strict about our work, be passionate about ourselves, and enjoy our lives." It also promotes group-wide environmental activities through its Environmental Security, and Safety Committees, at its headquarters, offices and plants. Fujikin's Tsukuba Research Plant has been ISO 14001 certified since September 2002. Fujikin also implements programs to encourage its employees to pass the Certification Test for Environmental Specialists (Eco Test), become certified as high pressure gas managers, and obtain other environmental qualifications.

# **Environmental Activities**

Fujikin is engaged in a variety of environmental activities, including: (1) Development of the 1.125" IGS (Integrated Gas System) The IGS has become the most commonly used system for gas flow



Comparison between 1.5" IGS and 1.125" IGS

# units for semiconductor/FPD production equipment. While standard IGS-based gas flow units are lighter and smaller than previous models using gas panels, Fujikin's newly developed 1.125" IGS has attained an even lighter weight and

more compact design. Compared with the existing 1.5" IGS, this new model achieves a reduction of about 30% in installation space and weight. When combined with Fujikin's FCS-P (Flow Control System-P) it enables an even smaller equipment footprint.



Fujikin's FCS-P

## (2) Going Green in Business Activities

Fujikin is working to reduce its electricity use and waste generation. It has installed energy-efficient FFU (fine filter unit) motors in its clean rooms, with the new motors requiring 20% less electricity than those previously used. Fujikin also achieves higher energy and process efficiencies by streamlining the layout of work spaces. In addition, redundant packaging has been eliminated to reduce resource consumption.

# (3) Sturgeon Farming

Fujikin started raising sturgeon in 1989 as part of its efforts to launch a biotechnology business. In 1992, Fujikin became the first private sector company to artificially cultivate this endangered fish. Sturgeon farming has become a successful commercial business, and Fujikin now sells caviar on the market. Fujikin's sturgeon farming facility



uses 800 tons of water daily, which is continuously recycled using a water circulation system.

Sturgeon at Fujijkin's aquaculture facility



Fujikin technology can be found wherever something is flowing

Yoshihiro Tsuchiya Chairman of the Environmental Security, and Safety Practice Committee Tsukuba Research Plant Fujikin Incorporated

The manufacturing process is the most energy-intensive stage in the life of our products. We therefore give high priority to improving the efficiency of our clean rooms. To meet customer expectations, we strive to offer products manufactured in an environmentally friendly manner, at affordable prices and with a short delivery period.

HIGHLIGHTS

SOCIAL REPOR

#### Recyclable cable caps

# Environmental Initiatives of Our Suppliers—Newtech Corporation

#### **Newtech Corporation**

Newtech Corporation (Newtech) has maintained a working relationship with the Tokyo Electron Group since their foundation in 1976. TEL sources assembly (Assy\*) components (harnesses, boards, units, etc.) for our etch systems, single wafer deposition systems, test systems, and FPD plasma etch/ash systems manufactured in our Yamanashi Plant from Newtech, which is based in Kai City, Yamanashi Prefecture. The company procures parts,

manufactures and inspects such Assy components for our Group.

\*Assy: Abbreviation of assembly. Assy components refer to both individual parts and multi-component parts.



Manufacturing process at Newtech

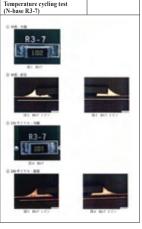
## **Compliance with the RoHS Directive**

To ensure its products are RoHS compliant, Newtech began reviewing about 3,500 components (which are grouped by Assy type for this purpose) in the second half of 2006 using a check list prepared by the Japan Green Procurement Survey Standardization Initiative (JGPSSI). If supplier data was not available, Newtech used Tokyo Electron Group's analytical equipment to confirm the status. In order to achieve lead-free products, Newtech sought support for the assessment of 1000-cycle reliability tests from external parties, such as an industrial technology center operated by the local prefectural government. The company also confirmed patent status with regard to this technology to manufacture lead-free components. Additionally, Newtech installed additional facilities and appointed fulltime staff responsible for RoHS compliance.

As a result, the RoHS-related survey was nearly complete as of June 2008. Applicable products are labeled with yellow stickers and stored in a separate location.

# Dedicated storage cabinet for

RoHS-c	ompliant components
	BACK



Temperature cycling test

## Environmental Activities

Newtech takes various steps for the preservation of the environment. For instance, the company began using different washing equipment to address concerns over the use of CFCs, which have an adverse effect on the ozone layer. Newtech also strives to reduce use of resources. For example, recycling cable caps and packaging plastic bags in cooperation with companies in charge of the next process of the supply chain. This improvement was based on an idea from an employee offered through an internal program set up to solicit employees' insights and ideas for improvement. Electricity consumption is checked hourly and the temperature setting of air conditioners is adjusted accordingly. Other major activities include neighborhood cleanups and fundraising campaigns for disaster relief.

#### **Quality Improvement Activities**

Newtech's quality control goal is to prevent any nonconforming products from being made available externally. In fiscal year 2008, the company achieved this goal with regard to etch systems supplied



Inspecting cables

to our Group, attributed by higher usage of jigs\* in assembly and inspection processes, as well as rigorous inspection and assessment of components by following a quality control process chart. The company also encourages its staff to take national-level technical skill tests. As a result, most factory workers at Newtech hold public qualifications, such as electronic circuit connection engineer certification and vocational training provider status.

Newtech also works to ensure all employees have regular physical exams, as they believe that their employees' well-being is an important element of quality production. The high quality of Newtech products underpinned by these efforts was recognized with an award from the Tokyo Electron Group.

\*A jig is a device used to instruct and guide the locations of tools during manufacturing operations



# Great agility and flexibility is our strength

Yoshihiro Hiraga President & CEO Newtech Corporation

The Tokyo Electron Group has been a client for more than 30 years. We will continue our efforts to meet the Group's environmental, quality, cost, delivery time and other requirements. While we have traditionally supplied TEL's Yamanashi Plant, we are currently gearing up to provide our products for the company's new Miyagi Plant as well.

# Plant and Office Initiatives for the Environment

The Tokyo Electron Group is implementing aggressive measures to reduce waste, save resources and prevent global warming. This section highlights environmental activities at our manufacturing plants and offices.

Total Environmental Impact	Ir	nput			C	output	
	I		Comparison with FY 2007	,			Comparison with FY 2007
right indicate the material flow at the Tokyo	Electricity 270.1	5 MkWh	(+2.4%)	TEL	Total product shipmer	t 27,329 t	(+0.2%)
nanufacturing plants and offices.	Gas 1,	478 km <sup>3</sup>	(+21.8%)		CO <sub>2</sub> 113	,169 t-CO2	(+2.2%)
vironmental impact mainly stems from the process	Fuel	2,613 kl	(-0.3%)	Tokyo Electron Group	NOx	12.1 t	(+1.6%)
ucts. This is because we evaluate our products	Water 1,	180 km <sup>3</sup>	(+1.8%)	(Domestic and overseas	Wastewater	1,170 km³	(+1.8%)
d a range of gases and chemicals to simulate the	Chemical produc (Regulated under the Pl		(-37.4%)	plants and offices)	Waste	12,312 t	(-20.5%)
tor manufacturing process.	as Type I chemical prod Paper (copy paper)	ucts) 337 t	(-10.7%)		Recycled amount Amount of waste and disposed of i	simply incine in landfills	rated
						366 t	(-11.6%)

# Details of

The figures on the r Electron Group's ma

The Group's env of evaluating produc using electricity and actual semiconducto

# **Preventing Global Warming**

## **Reducing Energy Consumption**

Our Group is committed to reducing energy use in compliance with the Energy Saving Act. Our plants and offices are actively reducing their energy consumption by setting specific targets calling for energy efficient use of lighting and OA machines, and appropriate temperature control of air conditioners. We will intensify our efforts to meet our commitment on environmental activities.

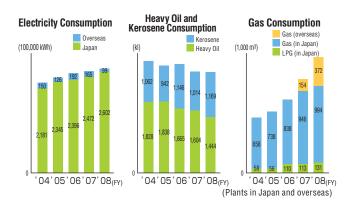
# **CO<sub>2</sub> Emissions from Energy Consumption**

In fiscal year 2008, we achieved the target of reducing CO<sub>2</sub> emissions from energy use per unit sales<sup>1</sup> by 1% from the previous year, although our total emissions of CO<sub>2</sub> from energy consumption increased due to production growth. We will continue to improve on our energy-saving measures.

We also began to calculate our emissions at overseas sites by applying energy coefficients used in the Survey Report on Estimated CO2 Emission Factors of the Power Sector of Major Countries (June 2006) by the Japan Electrical Manufacturers' Association (JEMA).

CO<sub>2</sub> Emissions from Energy Consumption CO<sub>2</sub> emissions (in Japan) CO<sub>2</sub> emissions (overseas) (t-CO2) - Energy use per unit of sales in comparison with the previous fiscal year Energy use per unit sales<sup>2</sup> 7.335 104 4 105.83 52.456 94,009 95 486 02.97 65 817 95,487 50 / 88 104.110 04.24 84 76 '03 '04 '05 '06 **'98** 'qq 00 '01 '02 '07 '08 (EY) 1 Comparison with the previous fiscal year (Plants in Japan and overseas) = per-unit energy use in FY 2008/ per-unit energy use in FY 2007

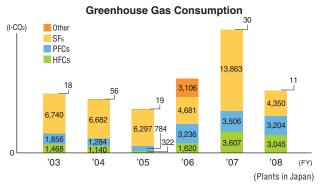
2 Energy use per unit sales=Energy use/ Sales



# **Reducing the Use of Greenhouse Gases other** than CO<sub>2</sub>

We use perfluorocarbons (PFCs) and sulfur hexfluoride (SF6), which are greenhouse gases, in dry etching, cleaning and other processes during process development and process evaluation.

In fiscal year 2008, we used 10,610 tons of greenhouse gases (as CO<sub>2</sub> equivalent), which is substantially smaller than the fiscal year 2007 level (21,006 tons). This was mainly due to a considerable decrease in the volume of SF<sub>6</sub> used for product development and evaluation at the Yamanashi Plant.



# **Resource Conservation**

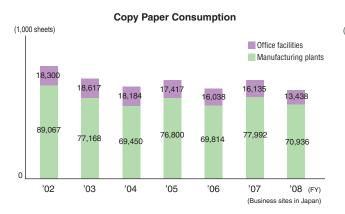
# **Our Approach to Resource Conservation**

We are working to minimize our use of resources. Specifically, we are reducing the use and purchase of copy paper and stationery and implementing green procurement practices giving preference to environmentally-conscious products.

We have replaced printer toner cartridges with cartridges made from recycled materials and cooperate with the manufacturers in the recovery of end-of-life cartridges. At some offices, we have established an intranet-based system, under which stationery no longer needed can be used by other departments.

# Efforts to Reduce the Use of Paper

We are making a group-wide effort to reduce paper consumption. Our employees are encouraged to practice duplex copying, copy at a reduced size and digitize information and internal circulars. As a result, the Group's total use of copy paper in fiscal year 2008 fell by



TOPICS

# **Donating PCs to Industrial High Schools**

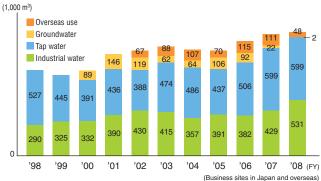
The Tokyo Electron Group is a partner in the Aizu Craftsmanship Training Project. This project aims to train the future talent who will support semiconductor and other manufacturing sectors in the Aizu area of Fukushima Prefecture. We donated 10 PCs to each of the project's member high schools, Aizu Industrial High School and Kitakata Industrial High School. Students from the two schools became the first high school participants of SEMICON Japan\* in 2007 with tools they developed themselves. The donated computers were used by our field engineers. We presented the donation certificate at a ceremony held at Aizu Industrial High School on January 25, 2008, which was attended by more than 100 students, teachers and related parties.

about 10%, or about 9.7 million sheets, from the previous year. In addition to reducing paper consumption, we are working to conserve natural resources through efforts such as using recycled paper and introducing bamboo-mixed paper cups.

We will continue to reduce the use of copy paper and minimize paper-based records and accounting slips in order to achieve further reductions in our total paper consumption.

# Efforts to Reduce the Use of Water

At our manufacturing plants, various measures are underway to reduce the use of water. For example, the plants have installed a water re-circulating system to reuse cooling water. They have also installed automatic faucets in restrooms and other facilities. These touch-free automatic faucets prevent water waste by automatically shutting off the supply when the user's hands are removed from the sensor range.



Water Consumption

Presenting the donation certificate at the ceremony

\*SEMICON Janan: World-class exposition of semiconductor and electronics equipment and materials

# Plant and Office Initiatives for the Environment

# Waste Reduction and Recycling

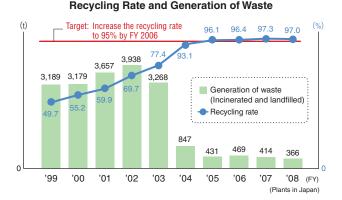
## **Our Approach to Waste Reduction and Recycling**

The Tokyo Electron Group strives to reduce and recycle waste. We work according to a firm policy to minimize waste first and foremost, but if waste is generated it should be recycled to the greatest extent possible, and unrecyclable waste should be disposed of in a proper manner.

In recent years, landfill costs have surged due to site shortages. This means that waste reduction also leads to cost reduction. We separate recyclable waste from non-recyclables, use new manufacturing processes which do not involve waste generation, manage the qualifications of contract waste disposal companies and periodically review final waste disposal practices.

## Waste Generation and Recycling Rate

In fiscal year 1999, the Tokyo Electron Group set a target of increasing the entire Group's average recycling rate to 95% by fiscal year 2006. As a result of efforts to attain this target, we



# TOPICS Collection and Donation of Pop Can Tabs

Our offices and plants are conducting a variety of programs to promote effective use of waste. For example, our Sagami Plant participated in a pop can tab collection program in November 2007 run by a local association of corporate executives and donated 6.5 kg of collected tabs. With the resulting funds, the association donated wheelchairs to social welfare facilities.



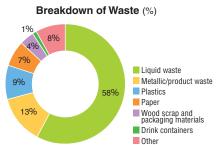
Document to prove the receipt of pop can tabs

achieved a recycling rate of 97.0% in fiscal year 2008 and 97.3% in fiscal year 2007. We are also focusing on reducing overall waste generated, as well as handling liquid waste by installing liquid waste treatment facilities.

## **Breakdown of Waste Generated**

Liquid waste from chemicals used in the product development and evaluation processes accounts for the largest percentage of waste generated by the Group. At present, most liquid waste is recycled. Thanks to the aforementioned treatment of liquid waste by in-house facilities, we were able to achieve a reduction of 20% in the total

waste (including waste recycled) in fiscal year 2008, 58% of which is liquid waste, down from 71% in fiscal year 2007.



# **Zero Emissions**

We define plants where less than 2% of waste generated by the plant is incinerated or put into landfills as "zero emission plants" and encourage all plants to achieve zero emissions. In fiscal year 2008, all our manufacturing plants strived to attain this goal, and achieved zero emissions. Our next step is to achieve zero emissions at our office facilities.

#### **Recycling Rate of Waste**

Plants	Recycling rate
Tohoku Plant	98.3%
Miyagi (Matsushima) Plant	99.7%
Sagami Plant	99.5%
Yamanashi Plant (Hosaka district)	99.9%
Yamanashi Plant (Fujii district)	99.8%
Kansai Technology Center	100%
Saga Plant	99.9%
Koshi Plant	100%
Ozu Plant	100%

Note: Rate of recycling of industrial waste (including industrial waste subject to special control)

(Plants in Japan)

# **Management of Chemical Substances**

# Our Approach to the Management of Chemical Substances

The Tokyo Electron Group uses chemical substances mainly in developing and manufacturing products. When developing products, we sometimes adopt new chemical substances that have not been used before, or use chemical substances in a way that is different from their traditional usage. In these cases, we look closely at the development facilities and methods, assess the environmental and operational risks associated with the use of the substances, and implement necessary measures before using the substances. We are also replacing dangerous and harmful chemicals used in the manufacturing process with safer substances.

## **Compliance with the PRTR\* Act**

According to the provisions of the Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof (PRTR Act), we rigorously control the specific chemical substances regulated under the act and identify the use and emissions of these substances on a continuous basis. Among the substances regulated under the PRTR Act, we use large amounts of hydrogen fluoride, mainly for cleaning test wafers. The hydrogen fluoride waste is disposed of by an external company or it is disposed of in an approved manner within our premises. Ethylene glycol, used as a refrigerant for cooling water, is another heavily used regulated substance. TEL recycles almost all ethylene glycol we use. We will continue to properly manage all risks associated with the use of chemical substances.

\* PRTR: Pollutant Release and Transfer Register. Under the PRTR system, the use of chemical substances that may be hazardous to human health and the ecosystem, their release into the environment, and transfer (contained in waste) outside of the business premises are identified, tabulated and disclosed.

# TOPICS

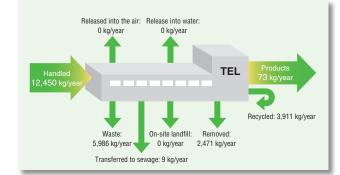
# Prevention of Chemical Pollution

At our Kansai Technology Center in Amagasaki City, Hyogo, we properly manage various types of chemicals used to develop and evaluate products. At the same time, we also ensure that appropriate steps are taken to prevent air and water pollution. The Center has periodically reported its wastewater data to Amagasaki City for the past five years (the city ordinance required more than nine such reports). Wastewater released from the Center has consistently met the applicable municipal standard. In February 2007, we were recognized by the City as an office with excellent wastewater management. We will continue to manage and control chemical substances, including proper monitoring of wastewater discharge.

Handling of Substances Regulated as Class I **Designated Chemical Substances under the PRTR Act** (kg) Other Xvlene 4.578 Hvdrogen fluoride and its water soluble salts ,221 Ethylene glycol 4.118 4.558 2.108 1 439 577 3,553 5 021 3.690 9,844 4.811 9 1 4 4 6.353 4 000 3 962 2,800 '07 '03 '04 '05 '06 '08 (FY)

Note: Data for fiscal year 2003 was calculated in metric tons

## Material Balance of Chemical Substances Regulated under the PRTR Act



# PCB Storage

Based on the Law Concerning Special Measures against PCB Waste, we report on the storage and disposal of waste containing polychlorinated biphenyl (PCB) to the governor of the prefecture on an annual basis. The Tokyo Electron Group presently stores two waste transformers and four waste capacitors that contain PCB in a strict and secure manner.



# **Health and Safety**

The Tokyo Electron Group promotes good health and safety for all who are involved in our business. We believe effective health and safety management is one of our responsibilities to society and an important element of our operations.

## For the Safety of All

The Tokyo Electron Group places great emphasis on the health and safety of customers, employees and anybody else involved in our business. Ensuring a safe workplace, safe products and healthy lives for our stakeholders is part of our responsibility to society.

Based on this belief, we provided safety training seminars for managers from October 2006 to March 2008. A total of 55 sessions were held at 12 plants and offices in Japan, in which 818 managers of our Group participated.

The training program started with a video message from top management, moved on to a lecture on human factors in accidents, analysis of actual accident cases and video-based learning on the obligation to maintain safety. It wrapped up with a presentation by each participant on their safety action plans. A great deal of positive feedback was given in the post-seminar survey, with comments including, "The best training program ever;" "From now on, I would like to practice what I learned in the program;" "I was able to follow the course easily because the example cases were familiar;" and

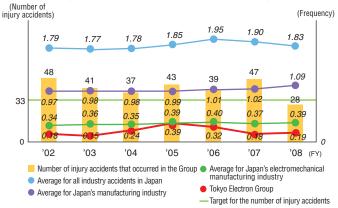


"The seminar made me recognize that I am the steward of my group members' safety."

Safety Seminar for Managers

# **Preventing Accidents**

In fiscal year 2008, while sales and shipment of products were increasing, the Tokyo Electron Group saw at least a 40% decline in the number of injury accidents (excluding minor accidents) from the previous year, achieving the goal of a 33% reduction from the 2000 level. This dramatic reduction was made possible thanks to our global safety management program, which was previously only operated in Japan. We particularly focused on safe installation of our products in factories of new customers in Asia. As a result, far fewer injury accidents occurred during installation or maintenance work. Other contributors to the reduced injury rate were the development of original safety tools, improvement of safety training programs and product design changes to reduce work in high places and heavy lifting. We are planning to take further steps to reduce injury accidents. In addition, from the fiscal year 2008 data, we have begun to calculate the frequency of occupational accidents based on the number of accidents resulting in one or more full-day absence in Japan.



Frequency of Occupational Accidents and Number of Injury Accidents

Note: The number of injury accidents is shown, taking the number in FY 2001 as 100. Frequency of occupational accidents: based on the number of occupational accidents per one million labor hours



Development of New Weight Scale to Reduce Accidents during Handling of Heavy Objects

Accurate measurement of weight is an important process in handling heavy objects. Visual or tactile assessment of weight tends to be misleading; workers often find the actual weight is heavier than they estimated. In the past, inaccurate measurement of the objects to be handled led to many injuries of Group employees, with the most common problems being back pain or getting stuck under the object. To prevent such accidents, we have implemented special weight scales which are traditionally equipped with tools for handling small parts and products.



# **Ensuring Product-Related Safety**

Safety has become an increasingly important element of our equipment design and development, reflecting growing demand from employees and customers. In response, we provided an online equipment safety education program in fiscal year 2007 with regard to the handling of our products. This web-based education provides necessary information for equipment safety design, such as risk assessment details, and lessons learned from past accidents.



taller as we seek better productivity amid smaller space requirements. This means a greater number of assembly and adjustment processes need to be conducted in high places and there is greater risk that our employees may fall. We work in earnest to minimize accidents during

In recent years, our

equipment has become

Online safety management training program

work in high places as part of our effort to achieve genuinely safe product design, "A safety program for product handling." Our latest coater/developers are designed to require less work, especially less heavy lifting, from high places. In particular, heavy components that were previously located on the top of equipment are now installed on the inside. In addition, we reduced the number of component adjustments and revised the frequency of periodic maintenance.

When assembling previous models, we needed to use safety steps and access platforms 90 times to complete one piece of our equipment, whereas the latest model requires 50 times.

# **Offering Safety Training with Hands-on Experience**

Desktop training and other vicarious learning may not be powerful enough to develop necessary vigilance for safe operations. Therefore, our Saga Plant provides hands-on experience training which aims to provide actual or simulated experience of what dangerous operational work is like, to raise employee awareness of occupational safety,

safety belt.

reducing accidents and the resulting

damage and injuries. During the

places, participants learn about

training to experience work in high

proper usage of safety belts through

use of a torso belt or a harness-type

Immersion into liquid



Experiencing being hung

To learn the risk of handling pressurized liquid chemicals, participants wear protective

clothes and goggles and are exposed to simulated pressurized water in a pipe. This experience is designed to ensure participants understand the importance of wearing protective gear in the correct manner.

To experience the potential of being electrocuted, participants touch an energized electrode with bare hands. Although sparks will result if a pair of energized electrodes come into contact, the shock from the three 12-V batteries connected in series does not affect the human body.



Electrode used in training



Witnessing the power of heavy objects

Participants also learn the potential risks of heavy objects by seeing floor tiles (the same type of those used in actual clean rooms) falling, crushing empty cans.

#### Eliminating Units on the Top Side



# **Relationship with Employees**

The Tokyo Electron Group endeavors to create a workplace that motivates employees and values their self-initiative.

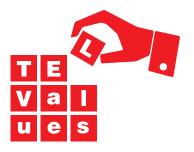
## **Concept Underpinning the Personnel System**

The Tokyo Electron Group respects a spirit of challenge and independence among its employees and aspires to be a corporate group in which employees can take on a variety of challenges. We are improving the working environment to attain the following three targets: (1) fair evaluation of employees who fail while taking reasonable risks in creative endeavors; (2) rigorous fairness in handling of our personnel; and (3) fairness in compensation. Our personnel system is designed to motivate the organization and help each employee develop him/herself. The system does not only focus on results, but also attributes importance to the process leading to those results. Our goal is to fairly evaluate employees based on their contribution through the three mainstays of "competency to assess processes," "the individual's role (mission)," and "results based on the employee's role (performance)." Competency is not just an objective of assessment and inspection, but a measure of growth of the individual employee's skills and abilities as required for various task categories.

Conce	ot of Our Personnel S	system	
	Company		
Mission Indicate company goals and directions	Performance Reward performance that helps the Company reach its goals with commensurate compensation	<b>Competency</b> Offer careers and opportunities to build skills needed to meet the company's goals	
Compete	<mark>sion:</mark> The individual's role ency: Competency to assess pro ance: Results as based on emplo		
	Employees		
Competency	Performance	Competency	
Obtain expertise and offer a	Provide performance that helps the company reach its goals	Polish up on professionalism to obtain higher salaries	

## **TEL Values**

In April 2006, we summarized the values and codes of conduct of the Tokyo Electron Group as TEL Values. At present, various related programs are being implemented, including the Chairman's visits to offices/plants and communicative forums among employees, in order to share TEL Values with all members of the Tokyo Electron Group.



In addition, we conduct an annual survey of employees to investigate their awareness of TEL Values and what effect they have on employee motivation. The results of this survey are shared with employees.

# Providing Employees with Comfort in the Workplace

The Tokyo Electron Group is committed to providing employees with a comfortable workplace. As part of efforts, we revised our childcare leave system in April 2007 and introduced a parenting benefit program the following October. Our employees can now take extended periods of leave for child care<sup>1</sup> and choose to work shorter hours (one hour less than regular hours) for a longer period<sup>2</sup>. In fiscal year 2008, a total of 54 employees took childcare leave. Our regular employees are also eligible to receive financial support of 500,000 yen; 300,000 yen; 200,000 yen; and 100,000 yen when their children are born, turn three years old, enter elementary school and enter junior high school, respectively<sup>3</sup>.

In addition, we have a "refresh vacation" system so that employees can refresh themselves both physically and mentally. Under this system, employees can take from two weeks to one month holiday when their term of service reaches 10 years, 15 years, or 25 years.

In recent years, mental health problems in the workplace have become a serious social concern. In response, we provide mental health education for our executives and are actively implementing measures to help employees look after their mental health.

- 1 In the past, employees were eligible for childcare leave until their children turned one year old (or 18 months in exceptional cases). However, they can now take leave until the end of the April following the date on which their child turns 18 months (or until their children are three years old in some exceptional cases).
- 2 Eligible employees can use this system until the end of the fiscal year when their children graduate from elementary school. In the past, eligibility was limited to those with children aged three or younger.
- 3 The benefit amount may vary if applicable children are not covered by the company's health insurance program.

#### **TEL University**

The Tokyo Electron Group believes that employees are invaluable assets for the Group. Based on this belief, we foster our employees' capabilities from a mid- and long-term perspective in order to achieve employees' individual development and increase the vibrancy of the Group. In other words, we aspire to be a company filled with dreams and vitality. For this purpose, we established TEL University in August 2007. TEL University is designed to provide employees with opportunities to obtain the knowledge and skills necessary for us to pursue the number one position worldwide. What's more, the University is useful in developing the capabilities of managers and educating the next generation of leaders as well as in promoting exchanges between management and employees and helping employees deepen their understanding of the TEL Values.

The Tokyo Electron Group strives for harmonious relationships and mutual growth with local communities wherever it operates.

Take child to work

# **Our Approach to Corporate Citizenship Activities**

At the Tokyo Electron Group, we place the highest priority on gaining the trust and acceptance of customers, suppliers, investors and communities throughout the world and therefore strive to be a faithful and cooperative member of the communities and nations in which we do business. Guided by these policies, we are engaged in a variety of activities as a good corporate citizen in Japan and overseas.

We will continue to build and maintain trusting relationships with the local communities in which we do business, consistently aiming for mutual growth.

## Plant Tours (Japan)

Tokyo Electron AT Limited, Tokyo Electron Tohoku Limited and Tokyo Electron Kyusyu Limited invite their local neighbors on plant tours in the hope of boosting communication with local communities and ensuring their neighbors are aware of their operations. Each of these tours attracted a good number of participants, who visited not only manufacturing plants but also employee cafeterias. We received a great deal of positive feedback from participants, including requests



to provide more such opportunities to interact with local people.

We will continue to build and maintain harmonious relationships with the local communities where we operate.

Participants in plant tour

# Take Our Daughters and Sons to Work (United States)

From 2003, Tokyo Electron U.S. Holdings, Inc. invites children (aged from 8 to 12) of its employees to their parent's workplace through the annual Take Our Daughters and Sons to Work event.

Through guided educational activities, the youngsters not only discuss various career paths, but also the cultures of people across the world. The event helps them see first-hand how numerous cultures work together to make a company successful and the importance of cultural understanding and respect for others.

During one of the activities, children learned about the importance of proper use of resources. They were briefed on improving resource efficiency and recycling. They were then divided into small groups to create robots within a 20-minute period by using a variety of endof-life products such as PET bottles, snack bags, gum wrappers, PC mice and cellular phones. Finally, each team presents their robot and the best performing team was granted an award.

The participants were also given a lecture on safety awareness, which was followed by a team-based quiz designed to enforce the concepts studied in the lecture. There were also opportunities to play



with Japanese toys and study math and science. This annual event helps the children develop a good understanding of different cultures as well as of an impression of what it is like to work in a global corporation. As a positive consequence, they generally take more of an interest in what their parent does at work. For employees, this has shown to help their motivation levels.

# **Company Tour for College Students (Taiwan)**

Tokyo Electron Taiwan Limited invited students from National University of Kaohsiung to the office on June 24, 2008. The participants sat in on lectures that gave a basic outline of semiconductors and watched a production demonstration that utilized training equipment. The objective of this company tour is to provide an opportunity for students to learn about the semiconductor production equipment business. We plan to place even greater focus on such activities in the future.

# **Christmas Charity Event (Europe)**

Tokyo Electron Europe Limited (TEE) hosts a charitable lucky draw event as a part of its annual Christmas party. For the 2007 event, TEE selected Rockinghorse Charity as the recipient of collected funds. Rockinghorse donates life-saving medical equipment to sick children hospitalized in medical institutes in Sussex, where TEE is located. Interestingly, the number of medical devices donated by Rockinghorse outnumbers those provided by the United Kingdom's National Health Service. We invited our suppliers to support this charitable event and received a total of 36 luxury prize items, including a television, cellular phones and a 19-inch PC screen. TEE employees bought a total of 617 pounds worth of tickets, which were available for purchase up

until the day of the event. Together with a matching fund from TEE, a 1,234-pound donation was provided to Rockinghorse on December 11. TEE will continue to proudly host such charitable events.



Donation of funds raised at the Xmas charity event

# Communicating with Local Communities (Corporate Citizenship Activities)

## Sponsorship of Eco Festa 2008 (Japan)

Tokyo Electron Kyushu Limited (TKL) became a corporate sponsor of the First Eco Festa 2008, held in Kawachi-machi, Tosu City, Saga on March 9, 2008.

This event, organized by the Tosu Forestry Cooperative, drew approximately 220 citizens of Tosu City and 46 TKL employees. Together they planted a total of 1,400 hardwood trees (cherry trees, camellia trees, oaks, dogwoods and maples). After the forestation activity, participants watched a 50 year-old, 30-meter tall zelkova tree being logged, with some taking pieces as a memento of the event.

This event was part of TKL's continuous promotion of environmental conservation activities.

# Tree Planting by Tokyo Electron Kyushu Limited (Japan)

TKL also planted trees on Mt. Tawara in Aso on March 15, 2008. For the activity, now in its third year, 228 TKL employees and their families planted 1,000 trees. In the future, TKL plans to sign an agreement to secure 1.5 hectares of land (plantable for five years) to the north of the planted area and continue the forestation program to create a watershed forest.

Tree planting on Mt. Tawara



#### **Clean Up of Neighboring Areas**

All Tokyo Electron plants and offices are engaged in cleaning-up and flower planting activities in their neighboring areas. We will continue to make contributions to ensure our communities stay clean and beautiful.

# Adopt-a-Street (United States)

Tokyo Electron U.S. Holdings, Inc. became the first company in the American city of Austin to "adopt" a road in the city as part of its

clean-up activities. In 2003, the company received a Keep Austin Beautiful Award.\* In recognition of our contributions to the Adopt-a-Street program, we were also granted a Keep Texas Beautiful Award.

\* This award was granted by Keep Austin Beautiful (KAB) in appreciation of a significant contribution to beautify and clean up the community and reduce waste. KAB is an Austinbased nonprofit organization and grants awards to individuals and organizations on an annual basis in recognition of environmental stewardship activities.

# Volunteering in Cleanup Efforts Following an Oil Spill in South Korea's West Coast (South Korea)

A total of 51 employees of Tokyo Electron Korea Limited volunteered their time on January 3 and 4, 2008 to help clean up an oil spill in the west coast of the country.



Oil cleanup activity

The spill occurred on cember 7, 2007 at the coas

December 7, 2007 at the coast of Taean after a tugboat snapped its towrope and a barge which was being pulled by the tug drifted, colliding with an oil tanker. As a result, an estimated 15,000 liters of crude oil was spilled. On the affected shores, sand and rocks were covered in a thick black oil slick, emitting a strong odor. Our employees worked together for the two days to help restore the coastline. We will steadfastly continue to make such contributions to help preserve the global environment.

# Donation of Gym Mat to Isawa Daiichi Elementary School (Japan)

Employees of Tokyo Electron Tohoku Limited visited Isawa Daiichi Elementary School in Oshu City, Iwate Prefecture on February 29, 2008 and donated a gym mat for use in physical education classes and "31-legged race" training. The school ranked third at the latest national 31-legged race. We were delighted and impressed with the students' enthusiastic reaction to our donation. After the presentation ceremony, our employees had the opportunity to compete in a 31-legged race with students of the school. All our employees will continue to work together to help develop the local community while aiming to achieve perpetual growth of our business.



31-legged race members

EHS REPOR

# **Comments from a Stakeholder**



# We received the following feedback on our *Environmental and Social Report 2007* as well as our business operations from Mr. Hitoshi Nakagomi.

#### Hitoshi Nakagomi

Division Leader, Business Siting Promotion Division, Business Siting Office Commerce, Industry and Labor Department, Yamanashi Prefecture

#### (1) Comments on the Environmental and Social Report

After reading the Tokyo Electron Group's *Environmental and Social Report 2007*, I was able to gain an understanding of the Group's strong commitment to becoming a part of the solution to the many problems society and the global environment face today and its uncompromising determination to make positive contributions to society as a leading Japanese corporation. What particularly impressed me was Chairman Higashi's recognition of the critical condition of society when he expressed that "the global environment is approaching a critical point." With this recognition, he clearly stated that it is the "Tokyo Electron Group's mission to provide environmentally friendly and highly economical and productive semiconductor equipment and technology."

Sharing the TEL Values such as pride, awareness and a spirit of challenge with Group employees worldwide will help maintain the morale of employees, which in turn works to increase stakeholder satisfaction and, ultimately, corporate value.

#### (2) Comments on the Tokyo Electron Group's EHS Activities

The Tokyo Electron Group implements its EHS activities based on analysis of current performance and works to include not only the Group but the entire supply chain and neighboring communities. I believe such an approach represents the Group's policy to play a responsible role in society.

I used to think that the pursuit of profit was the primary mission of business. However, after reading a section in the Roundtable Meeting with Stakeholders, where all participants agreed that pursuit of profit alone would only result in a greater environmental impact, I fully understand that the pursuit of profit and social contributions are compatible.

The Group also places great importance on communication with local communities and provides work experience and plant tours to local school students as a way of developing the talent of the industry. Yamanashi Prefecture welcomes such activities that nurture students' interest in manufacturing and develop future leaders in the region. Attracting and retaining human resources is an important priority for the prefecture.

## (3) Yamanashi Prefecture's Impression of the Tokyo Electron Group

Many people in Yamanashi feel close to Tokyo Electron Limited, a leading global manufacturer of semiconductor and FPD production equipment and a company with major plants and research facilities in the prefecture. Many local citizens are employees of the company and many TEL suppliers and business partners are located in the prefecture. As an outstanding leader of the electronic machinery industry in Yamanashi, TEL is like a vast tree with wide and deep roots across the prefecture.

We feel fortunate that such a leading company has facilities in Yamanashi Prefecture and makes great contributions to enhance the image and develop the economy of the region by successively releasing a wide variety of environmentally and safety-conscious equipment to national and international markets.

## (4) Requests and Expectations for the Tokyo Electron Group

Looking at the current energy landscape, we are going through a transitional period where the leading energy source is shifting from fossil fuels to new energy sources that leave no carbon footprint. Environmental friendliness is a mandatory element not only in manufacturing activities but in each and every action that we take in our lives in order to pass down a sustainable society to the next generation.

One of Yamanashi Prefecture's primary agendas includes the prevention of global warming, the creation of a recycling society, the development and introduction of clean energy technologies, and the maintenance and improvement of the aesthetic quality of Yamanashi, including the implementation of some aesthetic-related restrictions.

TEL's commitment to playing an important role in solving climate change issues through its intensified EHS activities is in alignment with the future direction of Yamanashi Prefecture. The prefectural government would like to provide support for TEL's related activities to the greatest extent possible.

#### **Our Response**

We appreciate these encouraging comments. Tokyo Electron AT will continue its environmental and safety efforts. Many initiatives promoted by Yamanashi Prefecture, such as those to mitigate global warming, create a recycling society and improve the aesthetic quality of the prefecture, take the same direction our business communities should target.

As a corporate member of Yamanashi Prefecture, we would like to make positive contributions to the communities in which we operate.

Kozo Hara President & Representative Director Tokyo Electron AT Limited



# **TOKYO ELECTRON LIMITED**

Environment, Health & Safety Center 2-30-7 Sumiyoshi-cho, Fuchu City, Tokyo 183-8705, Japan Tel: +81-42-333-8252 Fax: +81-42-333-8477 http://www.tel.com Published: November 2008





Use of Forest Thinning Support Paper Part of this pamphlet (from page 3 to 36) is printed using "Morino Chonai-Kai Forest Thinning Support Paper," the result of a partnership between Office Chonai-Kai, an environmental nonprofit organization working to support used paper recycling, and lwate Prefecture's lwaizumi-cho municipality, which is working to promote forest restoration.



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Waterless printing, which does not generate hazardous effluents, is adopted for this report. It is printed with volatile organic compound (VCC)-free inks on FSC-certified paper containing materials from properly managed forests.