

# Environmental Initiatives in Products and Logistics

## ■ Reducing Environmental Impact of Product Use

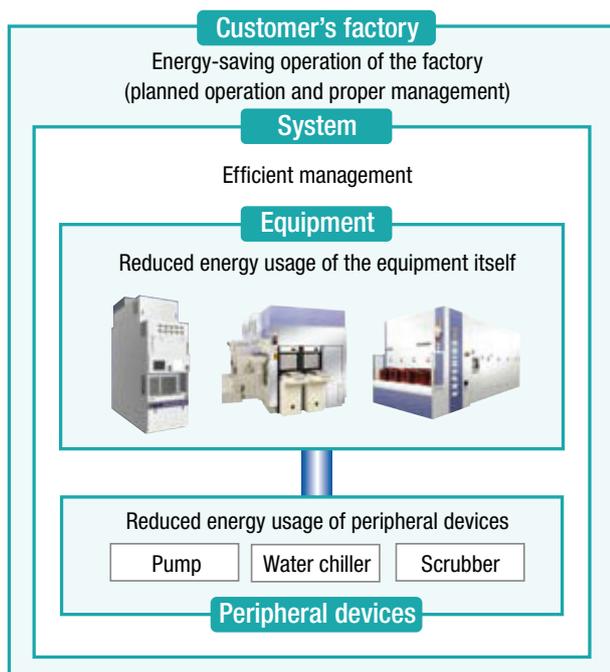
### Our approach to environmental initiatives

In its Environment Policy, the TEL Group clearly expresses its belief that promoting environmentally friendly product design is a crucial part of its corporate activity. The Group is particularly working on reducing the energy consumption of its products as a priority challenge.

### ● Energy-saving measures

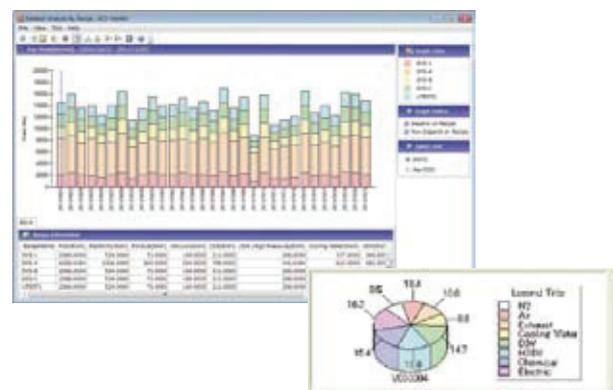
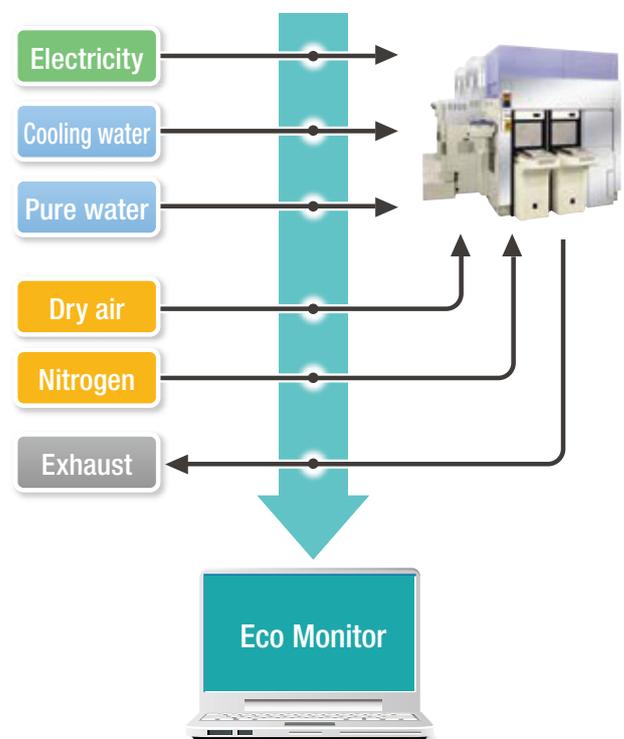
The TEL Group is making energy-saving efforts to achieve the goal of 50% reduction in energy consumption from the fiscal 2008 level by fiscal 2015 with regard to major models of each business unit. In fiscal 2013, we achieved the interim target of reducing energy consumption by 30% regarding major models of each business unit.

We are promoting the reduction of product energy consumption through four approaches: (1) reducing the energy used by the product itself; (2) reducing the energy used by peripheral devices; (3) ensuring systematic and efficient operation of products; and (4) ensuring energy-saving operation of customers' factories. As the importance of (3) and (4) is likely to increase in the future, we are planning to focus more on the monitoring and control of energy use.



### ● Energy monitoring

To facilitate the effort to reduce the energy consumption of our equipment when in use, we are developing a monitoring system for the centralized management of energy consumption. Known as the "Eco Monitor," the system visualizes the amount of electricity and other utilities supplied to the equipment during operation. It is expected that the data will be used for comparison and analysis purposes and will lead to the reduction of waste in energy consumption and the improvement of operational efficiency.



Monitors electricity, exhaust, water (cooling water and pure water), dry air and nitrogen as comprehensive energy during the actual operation of the equipment in accordance with SEMI S23\*.

### Glossary

\* SEMI S23: Guidelines for energy conservation for semiconductor production equipment issued by Semiconductor Equipment and Materials International (SEMI), an international industry organization for semiconductor/FPD production equipment and material manufacturers

● Equipment that achieved a 30% reduction in energy consumption (from FY2008 level; per wafer)

**Electricity**

**Plasma Etch System**  
Tactras™ Vigus™



**Key initiative:**  
Saving energy consumption of chiller, pump and heater

**Energy reduction: 31%**

**Electricity**

**Single Wafer Plasma Treatment System**  
Triase+™ SPAi



**Key initiative:**  
Eliminating temperature control unit by using plant-sourced cooling water directly

**Energy reduction: 50%**

**Electricity**

**Gas Chemical Etch System**  
Certas WING™



**Key initiative:**  
Improving productivity with two-wafer processing

**Energy reduction: 50%**

**Electricity**

**Single Wafer CVD System**  
Triase+™ EX-II™ TiN



**Key initiative:**  
Miniaturization and energy-saving operation of heater and pump

**Energy reduction: 50%**

**Pure water**

**Auto Wet Station**  
EXPEDIUS™-i



**Key initiative:**  
Reducing pure water consumption in standby mode

**Energy reduction: 36%**

**Dry air**

**Single Wafer Cleaning System**  
CELLESTA™-i



**Key initiative:**  
Reducing dry air consumption by improving the drying system

**Energy reduction: 50%**

**Dry air**

**Wafer Prober**  
Precio nano™



**Key initiative:**  
Reducing the amount of dry air supply with dew point monitoring

**Energy reduction: 50%**

**Nitrogen**

**Scrubber System**  
NS300+



**Key initiative:**  
Reducing the amount of exhaust by changing N<sub>2</sub> purging to dry air and improving duct

**Energy reduction: 50%**

**Nitrogen**

**Thermal Processing System**  
TELINDY PLUS™



**Key initiative:**  
Ensuring the use of proper amount of nitrogen

**Energy reduction: 30%**

**Exhaust**

**Coater/Developers**  
CLEAN TRACK™ LITHIUS Pro™ V-i



**Key initiative:**  
Reducing the amount of exhaust of rotating cup modules and saving energy in temperature/humidity control

**Energy reduction: 50%**

## Measures against Regulated Chemical Substances

### Our approach to regulated chemical substances

Reducing regulated chemical substances contained in products is essential when manufacturing environmentally friendly products. At the TEL Group, we set our own standards and continue to make efforts to reduce the use of regulated chemical substances in our equipment and quickly supply products that are in compliance with the laws and regulations of countries in which our customers operate.

### Reducing the use of regulated chemical substances in equipment

Although TEL Group products are exempt from the EU's RoHS<sup>\*1</sup> Directive, the TEL Group is committed to voluntarily reducing the use of the six RoHS substances<sup>\*2</sup>. We designate equipment that contains 98.5% or more parts that meet the EU's RoHS Directive as "equipment with fewer regulated chemical substances," and major models of each of our business units meet this standard. We will make continued efforts to increase the number of compliant models.

Additionally, to effectively become compliant with the EU's RoHS Directive, REACH<sup>\*3</sup>, Chinese RoHS and other regulations, we adopted JAMP AIS<sup>\*4</sup> and JAMP management guidelines for information on chemicals contained in our products. Prior to the adoption of these regulations, in fiscal 2013 we held briefing sessions for our suppliers. We will introduce the JAMP-IT system, which is an IT system promoted by JAMP for distributing information on chemical substances contained in products, and efficiently conduct surveys by requesting cooperation from our suppliers.

### Equipment with fewer regulated chemical substances as of FY2013

Thermal Processing System	TELINDY PLUS™
Single Wafer CVD System	Trias™
Wafer Prober	Precio™
Etch System	Telius™MSP
	Tactras™
Coater/Developers	CLEAN TRACK™ LITHIUS Pro™
	CLEAN TRACK™ LITHIUS™
Surface Preparation System	CELLESTA™+
	EXPEDIUS™
Wafer Bonding/Debonding System	NS300
	Synapse™ Series

### Complying with the laws and regulations in countries and regions where our customers operate

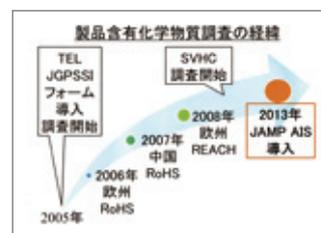
- ① We provide equipment in full compliance with China's version of RoHS, which requires that necessary information be provided to customers.
- ② In response to the EU's REACH regulation, we provide information on the content of any substance of very high concern (SVHC) and safety information when a SVHC amounting to more than 0.1% is present in any of our products.
- ③ In response to each country's regulations based on the GHS<sup>\*5</sup> formulated by the United Nations, the TEL Group makes available safety information on chemical substances through (material) safety data sheets, or (M) SDS, as well as labels affixed to containers carrying chemical substances.
- ④ With regard to battery regulations<sup>\*6</sup> enacted by the EU and Taiwan, we check whether applicable batteries are used inside our products and take necessary measures.

### Future plans

- ① We will further increase the percentage of equipment containing reduced amounts of regulated chemical substances.
- ② We will effectively use JAMP and other frameworks and will broaden our collaboration with customers and suppliers to promote more rational and accurate measures for the management of regulated chemical substances. We will also continuously improve our chemical substance management system, which we have built internally based on JAMP management guidelines for information on chemicals contained in products, to further strengthen our control over chemical substances.
- ③ We will further tighten the management of regulated chemical substances at a global level to achieve an even higher level of environmental compliance for our products.



Introductory presentation on management guidelines for information on chemicals contained in products



Presentation material

### Glossary

- <sup>\*1</sup> **RoHS:** Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment
- <sup>\*2</sup> **Six RoHS substances:** Lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBBs) and polybrominated diphenylethers (PBDEs)
- <sup>\*3</sup> **REACH:** Registration, Evaluation, Authorisation and Restriction of Chemicals. A regulation pertaining to the registration, evaluation, authorization and restriction of chemicals. For products containing SVHC amounting to more than 0.1 wt% in particular, manufacturers are required to provide information on the SVHC content of their products as well as information to ensure the safe use of the products.
- <sup>\*4</sup> **JAMP AIS:** Article information sheet (AIS) promoted by the Joint Article Management Promotion-consortium (JAMP). This sheet is used to deliver basic information on regulated chemical substances.
- <sup>\*5</sup> **GHS:** Globally Harmonized System of Classification and Labelling of Chemicals. A system agreed upon by the United Nations that is intended to provide unified standards across various countries for the classification of hazard level, labeling and the content of (M) SDS
- <sup>\*6</sup> **Battery regulations:** Regulations enforced in each country to facilitate the collection and recycling of batteries, including the mandatory indication of the recycling symbol on batteries

## ■ Reducing the Environmental Impact of Logistics

### Our approach to reducing the environmental impact of logistics

Regulations concerning logistics have been tightened with a view to helping curb global climate change. At the same time, companies are facing growing demands for measures to reduce environmental impact of their logistics. For its part, the TEL Group will continue striving to reduce environmental impact caused by the transport of its products through such means as promoting modal shift\*7 for domestic and overseas transport and adopting packaging methods with a smaller environmental footprint.

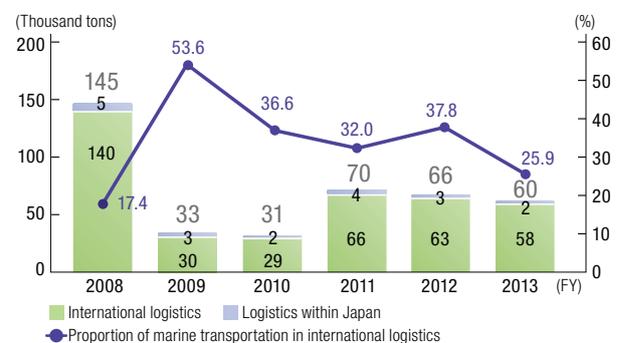
### ● Reducing the environmental impact of logistics

We calculate and monitor the CO<sub>2</sub> emissions of domestic and international logistics for our products. In fiscal 2013, we reduced CO<sub>2</sub> emissions by about 9% from fiscal 2012, to about 60,000 tons. The share of marine transportation used for exports was 25.9%, which declined from the fiscal

2012 level but improved by about 8 points from fiscal 2008. To further facilitate a modal shift by switching to marine and other transportation methods that have a lower impact on the environment, we are working to reduce production lead time.

We use wooden frames and corrugated cardboard as packaging materials when shipping products. To reduce the amount of resources used for packaging, we also use reusable corrugated cardboard boxes as packaging materials for some shipments inside Japan. Furthermore, casters and special tools used for moving products on-site at the customers' premises are collected and brought back to Group plants for reuse as part of our efforts to save resources.

### ■ CO<sub>2</sub> emissions from logistics and the proportion of marine transportation



## TOPICS

### Revision of Guideline for Green Procurement

On January 15, 2001, the TEL Group issued the Guideline for Green Procurement to operate its business based on its Environment Policy, and has since promoted green procurement that takes into account efforts to reduce the environmental impact of its suppliers' business activities.

In light of the more stringent environmental laws and regulations being enacted around the globe over the decade since the issuance of the Guideline for Green Procurement, the TEL Group revised the guideline in November 2012. The revised guideline consists of the following:

- 1. Improving the environmental management system**  
Improving the sustainable corporate environmental management system to conserve the global environment by referring to the ISO14001 environmental management system
- 2. Monitoring, reducing, and disclosing the environmental impact of business activities**
- 3. Considering the environmental impact of products**
  - Providing labels required for delivery of gas and chemical products, as well as safety information
  - Measures for regulated chemical substances in components, parts, materials, and chemicals used for maintenance
  - Measures required for chemical substances contained in built-in components and parts
  - Information on batteries for built-in components and parts
  - Reducing energy consumption and improving energy efficiency
  - Resource saving, reuse and recycling
  - Reusing packaging materials, use of environmentally friendly materials, ensuring compliance with laws and regulations
  - Providing environmental information



Guideline for Green Procurement

### Glossary

\*7 **Modal shift:** A shift in the mode of transportation. Specifically, switching from conventional freight transportation by truck or aircraft to means such as marine and rail, which have a lower impact on the environment