

Plant and Office Initiatives for the Environment

Preventing Global Climate Change

Our approach to climate change

At the TEL Group, each plant and office makes efforts to achieve its own goal of energy consumption reduction set in units (e.g., floor area) that it has chosen to measure and reports energy consumption depending on the form of its business. The Group is also proactively adopting photovoltaic power generation systems to reduce CO₂ emissions.

Efforts to reduce energy consumption

In accordance with the Act on the Rational Use of Energy, the Group plants and offices have set the goal of reducing energy consumption by at least 1% year on year. In fiscal 2013, five out of six TEL plants in Japan achieved this goal. Energy consumption with the unit of kiloliter of crude oil equivalent*¹ decreased by 6.4% from the previous year (Figure 1).

Figure 1: Energy consumption in FY2013

(Baseline year = FY2012)

Plant	Energy consumption (kl)	Energy consumption over baseline year	Per-unit consumption over baseline year
Tohoku Plant	3,400	102%	89%
Technology Center Sendai	2,754	103%	104%
Yamanashi Plant (Hosaka)	11,645	89%	89%
Yamanashi Plant (Fujii)	9,511	95%	95%
Koshi Plant	15,905	96%	96%
Ozu Plant	3,478	82%	82%
Total	46,693	93.6%	

Power consumption of the entire TEL Group increased by about 4% from fiscal 2012 (Figure 2). CO₂ emissions associated with energy use increased by about 38% from fiscal 2012, primarily due to worsening power emission factors in Japan (Figures 3 and 4). If power emission factors are assumed to be at the same levels as those in fiscal 2012, CO₂ emissions at plants that have set their targets decreased similarly as with energy consumption (Figure 5).

Introducing PV power generation systems

In fiscal 2013, the Koshi Plant introduced photovoltaic power generation systems. The TEL Group generated a combined total of 3,858 MWh using PV cells installed at the Koshi Plant as well as the Yamanashi and Miyagi Plants, which had already adopted PV systems, in fiscal 2013 (Figure 6).

Figure 2: Electricity consumption

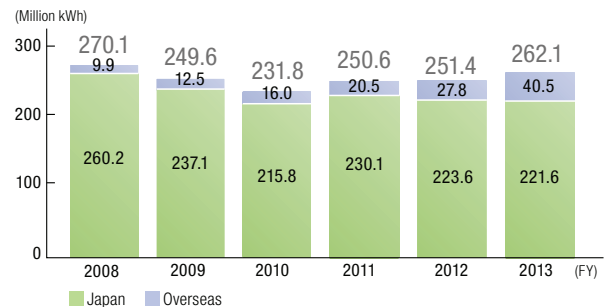


Figure 3: Breakdown of CO₂ emissions from energy consumption*² by source

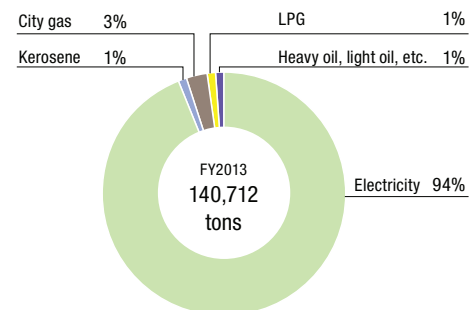
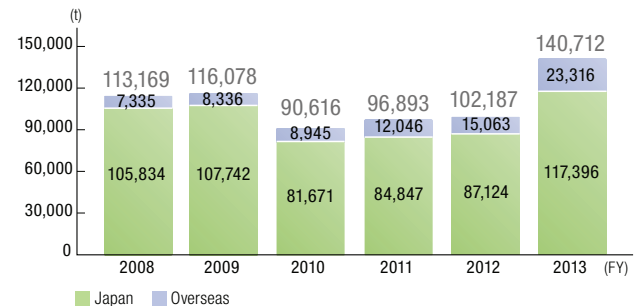
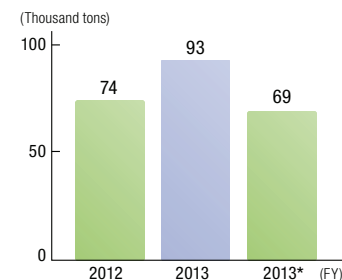


Figure 4: CO₂ emissions from energy consumption



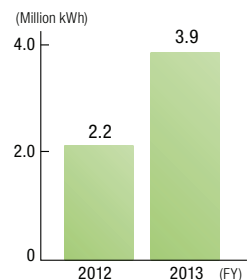
CO₂ emissions in fiscal 2012 totaled 87,124 tons minus a 50,000 ton reduction brought about through the use of a domestic clean development mechanism (CDM)*³.

Figure 5: CO₂ emissions in areas that have set goals



*When power factors are the same as those in fiscal 2012

Figure 6: Electricity generated with PV power generation systems



Glossary

*¹ **Kiloliter of crude oil equivalent:** Volume of electricity, heavy oil, gas and other types of energy used × Per-unit calorific value of each energy type × Conversion rate for crude oil equivalent

*² **CO₂ emissions from energy consumption:** We used adjusted emission factors for individual electric power providers for the emission factor for electricity consumption in Japan in fiscal 2013. For the emission factor for electricity consumption overseas, we used estimated factors calculated by the Federation of Electric Power Companies of Japan based on values published by the International Energy Agency (IEA).

*³ **Domestic clean development mechanism (CDM):** The approved mechanism for CO₂ emissions reduction under Japan's Domestic CDM System (a Japanese government scheme that allows small and medium-sized businesses to receive funding, technology, and technical support from large businesses in order to work collaboratively to reduce CO₂ emissions and trade the reduced amount as emission credits)

■ Conserving Resources

Our approach to resource conservation

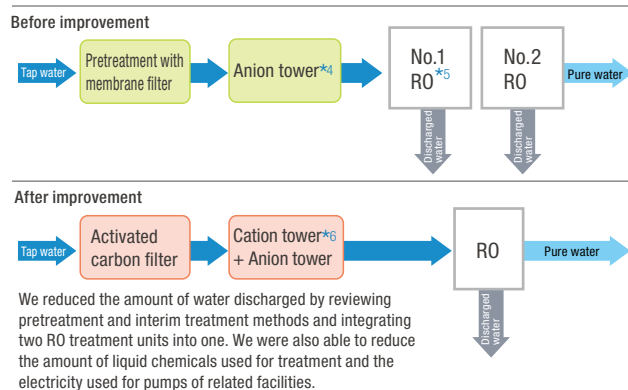
The TEL Group is working to minimize the use of limited natural resources by reducing the volume of water and paper used.

● Efforts to reduce water consumption

The TEL Group has set a new environmental goal of keeping water consumption at the same or at a lower level than the basic unit set by each plant in fiscal 2012. In fiscal 2013, five out of the six goals set regarding water (tap water, industrial water and groundwater) used at six TEL plants in Japan were achieved.

The Hosaka Plant, for example, streamlined facilities for pure water, which accounts for a majority of water used, and consequently reduced overall water consumption by about 5% from fiscal 2012 levels. At the same time, the Ozu Plant carried out activities to reduce water consumption at its cafeteria, including ensuring intermittent operation of faucets and using rinse-free rice, which resulted in a 67% reduction in water consumption compared to the level before implementing the series of measures. While sharing these practices throughout the group, each plant is making efforts to reduce water consumption.

■ Streamlining pure water facilities at the Hosaka Plant



● Efforts to reduce the use of paper

Our employees are encouraged to use duplex copying, to copy at a reduced size, and to digitize information and internal circulars. As a result of these efforts, the TEL Group's use of copier paper in Japan in fiscal 2013 decreased by about 25%, or more than 8 million sheets, compared with fiscal 2012.

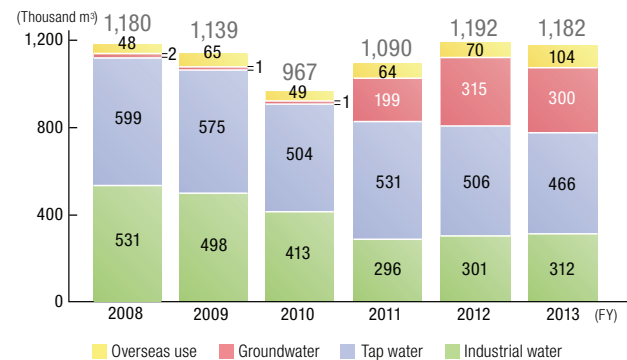
■ Water consumption in FY2013

(Baseline year = FY2012)

Plant	Water type used	Water consumption (m ³)	Water consumption over baseline year	Per-unit consumption over baseline year
Tohoku Plant	● ●	56,965	121.5%	88.8%
Technology Center Sendai	●	50,246	116.6%	110.3%
	●	7,501	73.0%	69.1%
Yamanashi Plant (Hosaka)	●	243,377	95.2%	95.2%
Yamanashi Plant (Fujii)	●	60,029	93.3%	93.3%
Koshi Plant	● ●	527,899	89.4%	89.2%
Ozu Plant	●			
Total		946,017	93.6%	

● Tap water ● Industrial water ● Groundwater

■ Water consumption

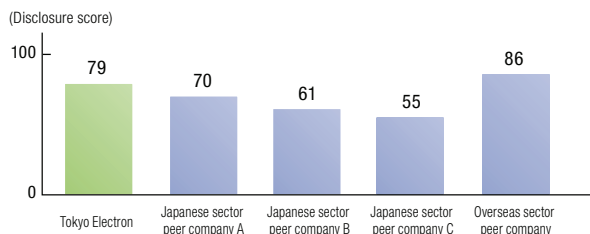


TOPICS

Achieving a 79 CDP*7 2012 disclosure score

Tokyo Electron scored 79 for its CDP disclosure score, which evaluates strategy on climate change, initiatives to reduce greenhouse gas emissions and status of information disclosure. We will continue to make proactive efforts for environment conservation and information disclosure.

■ Score of semiconductor production equipment manufacturers



Glossary

*4 **Anion tower**: A tower where anion treatment is conducted

*5 **RO**: Reverse osmosis operation

*6 **Cation tower**: A tower where cation treatment is conducted

*7 **CDP**: Carbon Disclosure Project. A project that works with institutional investors to ask leading companies by market value in key countries to disclose their strategies for combating climate change and greenhouse gas emissions. Since its start in 2000, the response rate from corporations has been increasing year by year.

■ Reducing Waste

Our approach to waste reduction

In its efforts to minimize waste, the TEL Group recycles whatever waste is generated to the greatest extent possible, and disposes of non-recyclable waste in a proper and responsible manner.

To be more specific, we separate recyclable waste from non-recyclables, use new manufacturing processes that do not involve waste generation, hire only waste disposal companies inspected and authorized by our company, periodically check final waste disposal practices, and also focus on educational activities related to the sorting of waste and other topics. Some business sites have begun using electronic manifests*1 to ensure proper management of waste.

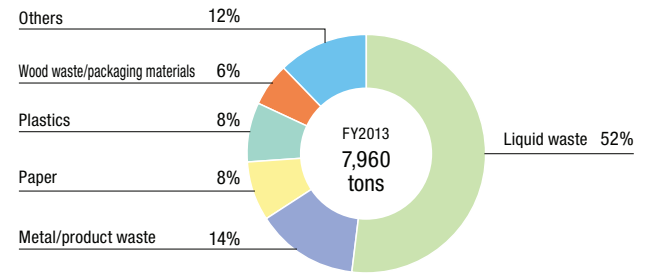
● Volume of waste generated and recycling rates

The volume of waste generated at TEL plants and offices in Japan decreased by 38% from fiscal 2012, as the liquid waste treatment building at Koshi Plant began its operations, resulting in a decrease in the volume of liquid waste to be treated by an outside contractor. With a recycling rate*2 of 97.3% in fiscal 2013, the TEL Group achieved its goal of maintaining a recycling rate of 97% or more. Also in fiscal 2013, the Group monitored the volume of waste generated at its plants and offices outside Japan, and confirmed a recycling rate of about 20%. We will monitor the volume of waste generated at overseas locations in a more accurate manner for even higher goal setting.

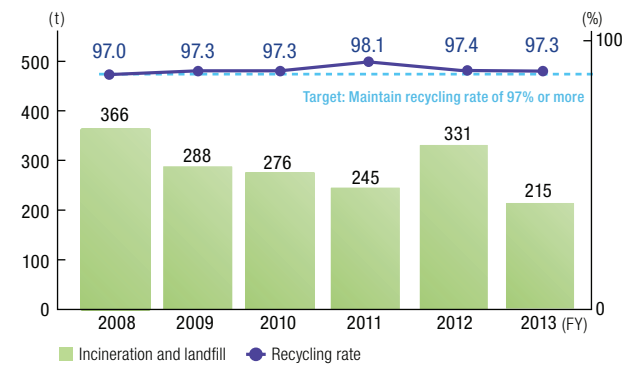
● Zero waste

The TEL Group defines plants where less than 2% of waste generated is incinerated or put into landfill as “zero waste plants.” In fiscal 2013, we achieved zero waste at six plants in Japan as a result of our efforts to reduce waste and recycle.

■ Breakdown of waste (Japan)



■ Recycling rate and generation of incinerated and landfill waste (Japan)



■ Recycling rate for industrial waste generated at TEL Group plants in Japan

Plant	Recycling rate	
	FY2012	FY2013
Tohoku Plant	99.2%	100%
Taiwa Plant	100%	100%
Yamanashi Plant (Hosaka)	100%	100%
Yamanashi Plant (Fujii)	100%	100%
Koshi Plant	100%	100%
Ozu Plant	100%	100%

TOPICS

Overseas initiative

Tokyo Electron Taiwan Limited (TET) has worked on waste sorting, i.e., separating recyclable waste from general waste. By installing trash bins labeled by the type of waste at the entrance of the office and the clean room to ensure proper waste sorting, TET achieved a recycling rate of 63% in fiscal 2013. TET will continue to work on reducing and sorting waste to improve their recycling rate.



Trash bins labeled for waste separation installed at the entrance of the kitchen and clean room

Glossary

*1 **Electronic manifest:** A system in which the flow of industrial waste is managed via a communication network linking information processing centers, the companies generating the waste, waste collection and transportation companies, and waste disposal companies. It replaces the conventional paper-based control manifest.

*2 **Recycling rate:** Recycled amount ÷ Amount of waste generated × 100

Management of Chemical Substances

Our approach to the management of chemical substances

The TEL Group uses chemical substances mainly in the development and manufacturing phases of products. In the development phase, whenever we introduce a new chemical substance or alter the method of using a chemical substance, we make sure to check for environmental, health and safety risks and take the necessary measures before the new substance or method is adopted.

Compliance with the PRTR*3 law

In accordance with the Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof ("Japanese PRTR law"), we ensure that chemical substances regulated under the law are managed rigorously, and that the amounts of regulated substances used, discharged and transferred are consistently monitored. The TEL Group uses hydrogen fluoride, one of the regulated substances, in large quantities particularly during the cleaning of test wafers. We make sure to properly dispose of the hazardous substances

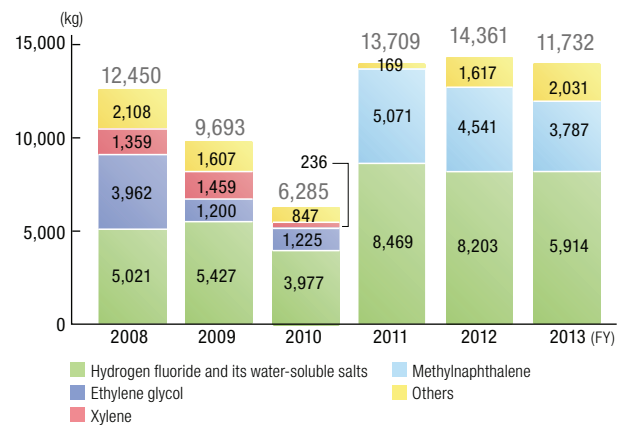
after use either through specialist waste disposal contractors or using our in-house processing equipment. We will continue to properly manage risk relating to these chemical substances.



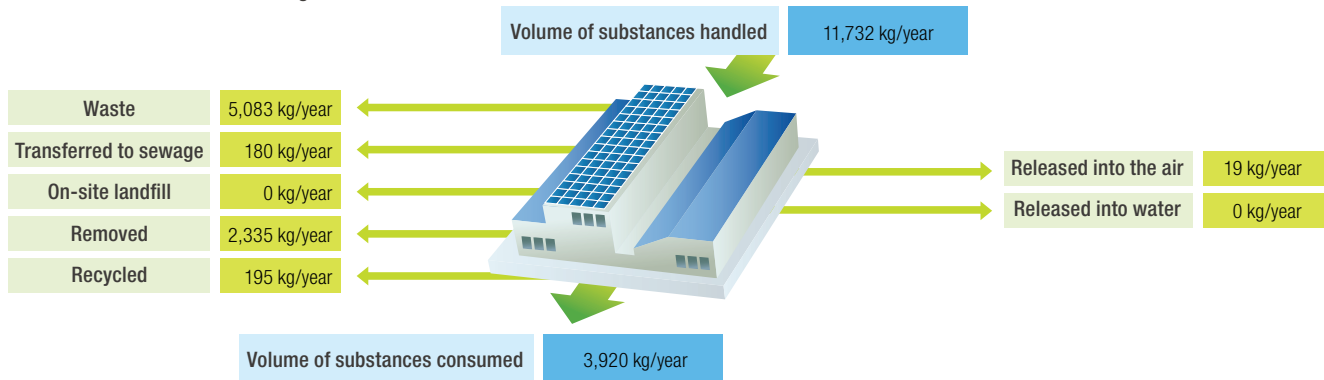
Shelves used to store chemical substances at TEK

Illustrating one example of proper chemical substance management, Tokyo Electron Korea Limited (TEK) specifies where to store the chemical substances it handles, keeps (M)SDS information at the storage site, and places GHS-required labels on containers used for carrying chemical substances.

Volume of PRTR Class I Designated Chemical Substances handled (Japan)



Material balance of PRTR-regulated substances



Input and output (FY2013)

Input	Volume	Change from previous year
Energy (crude oil equivalent)	69,684 kl	+5.0%
(Breakdown) Electricity	262.15 million kWh	+4.3%
Gas (crude oil equivalent)	2,668 kl	+36.0%
Fuel (crude oil equivalent)	1,216 kl	-20.1%
Water	1.182 million m ³	-0.9%
Chemical substances (Class I Designated Chemical Substances under the PRTR system)	11.7 tons	-18.2%
Paper (copier paper)	99 tons	-25.0%
Material/packaging material		



Output	Volume	Change from previous year
CO ₂ emissions from energy consumption	140,712 tons	+37.7%
Waste	7,960 tons	-38.2%
(Breakdown) Recycled amount	7,745 tons	-38.3%
Amount of incinerated/landfill waste	215 tons	-35.0%
Total product shipment	9,634 tons	-36.8%

Glossary

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