

Environmental Report 2010

April 2009 - March 2010



Corporate Initiatives for the Environment



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Editorial Policy

Epson Toyocom Group is taking serious steps to protect the environment. In this report, we present our stance on the environment and some examples of how we put our beliefs into action. We have tried to make the content as comprehensible as possible so that our stakeholders will find these efforts meaningful.

Scope of report

- Reporting period: April 2009 - March 2010
- Organizations covered in report:
Epson Toyocom Corporation and
11 affiliated companies

* For details, see "Environmental data reporting scope" on page 15.

* Throughout this report, "we" refers to the Epson Toyocom Group.

Major reference material

- Epson Toyocom Corporation Corporate Profile
- Epson Group Sustainability Report 2010

Date of next publication

- June 2011

Logomark

Our logo consists of a small but powerful point of light, representing a crystal device, radiating across a circle symbolizing the world. The image represents the technologies that have become indispensable to the devices that people depend on every day.



Company Profile

- Company Name: Epson Toyocom Corporation
- Head office: 421-8 Hino, Hino-shi, Tokyo
- Founded: July 1891
- Incorporated: November 15, 1938
- Paid-in capital: 12,266 million yen (as of March 31, 2010)
- Employees: 2,000 (as of March 31, 2010)
- Business areas: Development, manufacture and sales of three classes of crystal-based products: timing devices, sensing devices and optical devices

Major products



Timing devices

Devices that provide a timing signal and continuous synchronization signal to transmit information with accurate time and speed.



Sensing devices

Devices that convert physical values, such as angular velocity, temperature and pressure, to an electric signal.



Optical devices

Devices using the optical properties of materials such as crystals and glass.

Production sites and sales network



*Photos show production sites

*Epson Toyocom uses Seiko Epson sales sites overseas (noted in yellow rectangles).

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To Our Stakeholders

In the 2009 fiscal year, signs of a recovery from the global economic crisis began to emerge as economic initiatives with an ecological bent gained traction, such as the construction of smart grids and smart cities and the creation of programs that reward shoppers for purchasing “greener” products. As a leader in crystal devices, Epson Toyocom recognizes that addressing environmental issues is a critical obligation, and that is why we are driving forward-looking environmental initiatives that meet the demands of customers and the global community for ever-smaller QMEMS products that save resources and energy.

In this report we provide an overview of the actions we took during the 2009 fiscal year to protect the global environment. Over the year we sought to realize both ecological and economic benefits by driving company-wide environmental actions to help shrink the environmental footprints of our customers and of society. Working as a team, we were able to reach certain milestones. For example, we established an indicator for measuring increases in the added value of eco-considerate products, and we met certain goals in our efforts to reduce greenhouse gas emissions and save resources.

Moving forward, Epson Toyocom will continue to do its part in the sustainability effort by setting ambitious eco objectives, mitigating the environmental impact of business operations, and creating and providing eco-considerate products.

It is our hope that this Environmental Report will deepen understanding of Epson Toyocom’s environmental initiatives and that our readers will give us their honest opinions in return.



President
Torao Yajima

Epson Toyocom Mission Statement

Epson Toyocom is committed to contributing to the growth and development of the global electronics industry by offering high-quality, crystal-based electronic devices and applied technologies.

Epson Toyocom is dedicated to being a trusted, good company, one that remains sensitive to social and environmental changes and needs and that moves quickly to address them.

Epson Toyocom fulfills its social responsibilities as a good corporate citizen and promotes the good citizenship, health and happiness of all its employees by encouraging them to refine their sensibilities and pursue creativity and challenges.



Epson Toyocom Group Environmental Policy

Environmental Philosophy

The Epson Group will integrate environmental considerations into its corporate activities and actively strive to meet high conservation standards in fulfilling its responsibilities as a good corporate citizen.

Environmental Policy

Drive progressive environmental initiatives by pursuing innovation in compact, energy-saving, high-precision technologies revolving around our core QMEMS technology, thereby providing customer value in the form of reduced environmental impacts.

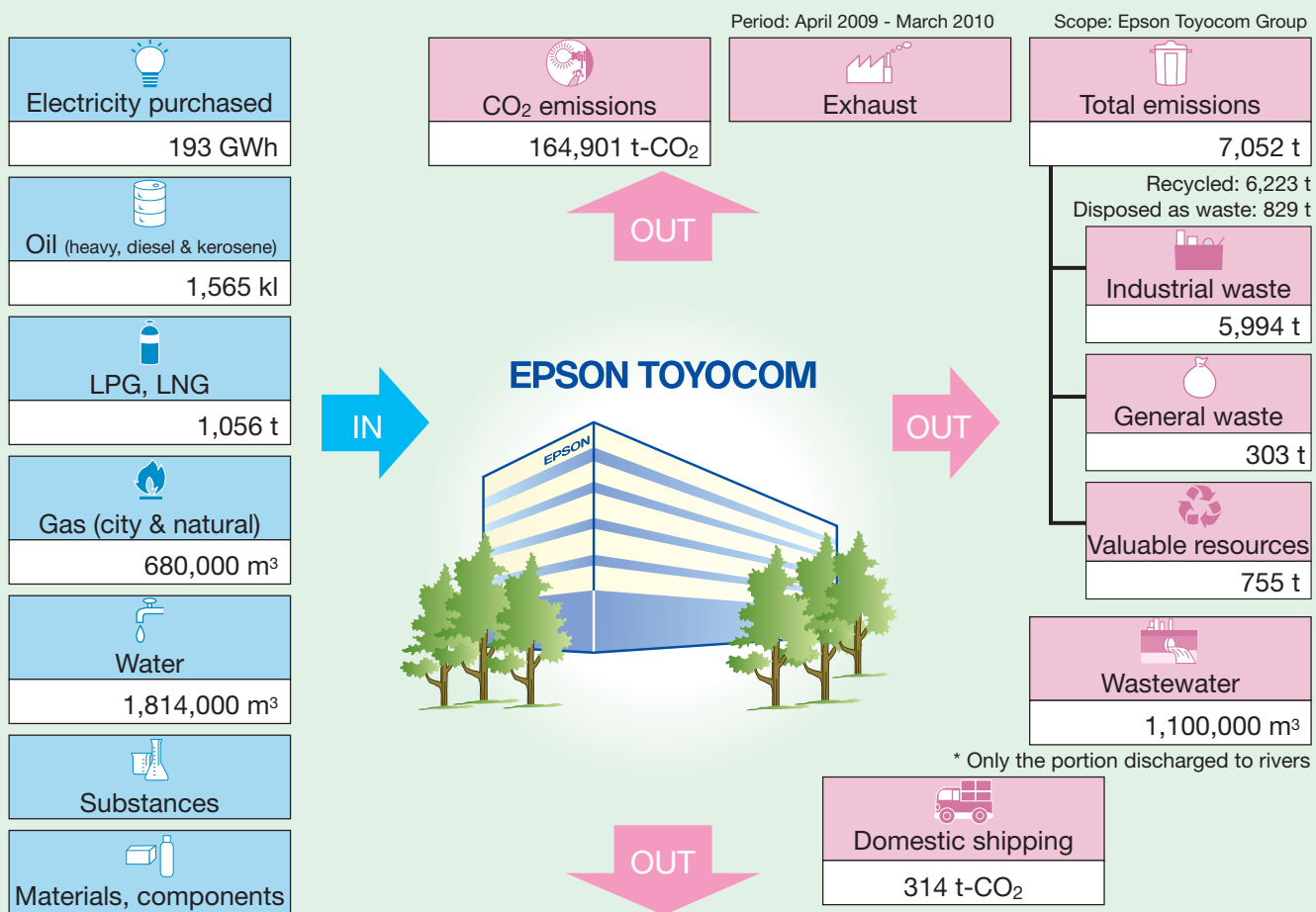
To accomplish this, we will:

1. create and provide the ultimate in compact, energy-saving, high-precision crystal devices, and build and revolutionize production processes that increase throughput while reducing environmental impacts.
2. strictly observe environmental laws, ordinances and voluntary commitments, establish independent standards as needed, and strive to prevent pollution by continually improving on our environmental practices.
3. strive to raise the level of our environmental practices by setting and pursuing environmental goals and targets and by regularly reviewing our environmental management systems.
4. strive to conserve local environments through community engagement and corporate citizenship initiatives.
5. share information on our environmental activities, strive to build trusted relationships with all stakeholders and communities in which we operate, and contribute to the advancement of society.

We shall document this policy, communicate it to all employees and to all persons engaged in the business of our group, and share the policy with the public.

established October 1, 2005
Revised July 31, 2007
Revised Jun 22, 2010

Business Activities and Environmental Impact



Products

Timing devices
Tuning fork crystal units, AT-cut crystal, SAW resonators, crystal oscillators, real time clock modules



Sensing devices
Gyro-sensors, temperature sensors, pressure sensors



Optical devices
OLPFs, crystal heat-sink plates, prisms



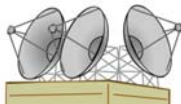
These are incorporated into various electronic devices by our customers.



Clock function for electronic devices, IC and other clock standard signals



Automobile keyless entry systems



Cell phone base stations, broadcasting equipment

Digital camera image stabilization and detection



Changes in water level detected by a pressure sensor and indicated on control system monitor, etc.



Digital camera moiré filter



LCD projector optical units

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Targets and Results (FY2009)

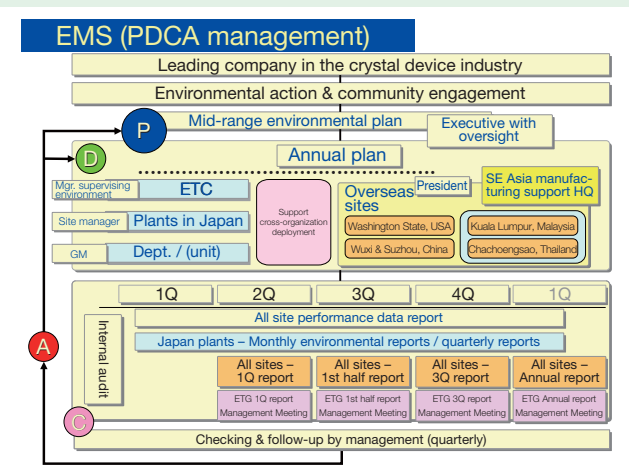
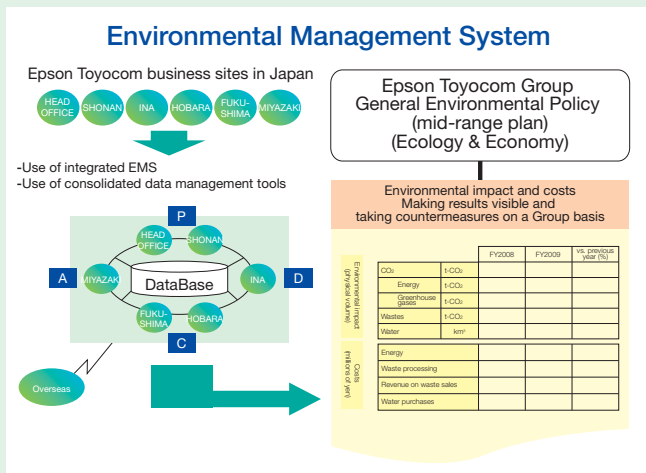
Major targets and results

Epson Toyocom endeavors to meet a mid-range plan for environmental initiatives (the General Environmental Policy) and yearly action plans. Our key action items and corresponding results for FY2009 are as follows.

	Action	Target	Result	Grade	Note
Eco products	Creation of products with energy-saving design	According to product development plan	Achieved (energy conservation rate 73%)	A	Model: SG-2103CA
	Substitution of hazardous substances included in products	Adopt safer alternatives in accordance with plan	Achieved the plan	A	
	Product substance content management	Zero customer nonconformances	Zero customer nonconformances	A	
	Examination of environmental impact mitigation indicator	Establish an indicator	Computed an indicator	A	
Green factory	Global warming prevention (reduction of CO ₂ emissions)	Consolidated: 23% increase per unit of sales (vs. '04) Japan: 57% reduction per unit of sales (vs. 1990)	23% increase 59% reduction	A A	
	Resource recycling and conservation	Consolidated: Reduce CO ₂ emissions by 7% (vs. prior year) via reduction measures 5% reduction in waste processing costs (vs. 2008) at Japan sites	Consolidated: 5.3% Breakdown Japan sites: 5.0% Foreign sites: 5.5%	B	Target achieved in Shonan, Ina & Wuxi
	Substance management	Consolidated: 7% reduction in water used via reduction measures 5% reduction in chemical use (vs. 2008) at domestic sites	Consolidated: 12% Breakdown Japan sites: 2.6% Foreign sites: 17.7%	A A	
	Simplification of EMS	Complete simplification	Completed simplification of EMS	B	Improved internal environmental audit and environmental impact assessment methodologies
	Environmental communication	Issue environmental report (June)	Posted report on the Web on July 10	B	English & Chinese versions to be posted in October
Infrastructure	Community engagement	Establish projects at each business site	Executed based on site plans	A	35 projects (53 times) / 14 sites

Environmental management

To ensure that we achieve our environmental action plan, we have implemented a system to manage our environmental data. The system facilitates environmental measures designed to achieve both ecological and economic benefits by quantitatively tracking environmental impacts and costs and by making progress visible. As a global enterprise, Epson Toyocom believes it is important to introduce strong environmental measures not only in Japan but overseas, as well. The companies in the global Epson Toyocom Group are thus driving environmental initiatives worldwide. To ensure that we progress toward our objectives, we make use of teleconferencing to maintain close communication with our overseas affiliates, send experts to sites around the world to provide support when necessary, and hold a meeting of the heads of overseas affiliates once every six months to discuss environmental action policies and issues.



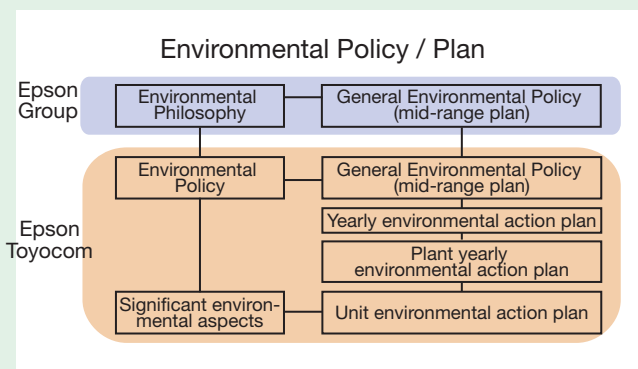
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Environmental Management

■ Environmental planning and implementation system

To live up to our Mission Statement and our goal of “being a trusted, good company,” Epson Toyocom establishes and follows environmental annual and mid-range (three-year) action plans based on our Group-wide Environmental Policy. To better pursue these initiatives, we use an environmental management system (EMS) based on the international standard ISO 14001. Under this system we execute our plans, perform inspections, and make improvements to meet our twin aims of ecology and economy. (All major sites of Epson Toyocom have earned ISO 14001 certification.)

In fiscal 2007, less than two years after the October 2005 merger that formed Epson Toyocom, we consolidated the various EMS in use at sites in Japan, launched an integrated EMS encompassing all sites, and acquired integrated certification for ISO 14001. In fiscal 2009, we updated our EMS to enable us to better and more efficiently use the system and carry out environmental actions more closely tied to our business activities.



■ Risk management

Epson Toyocom practices strict control over wastewater, exhaust, industrial wastes and other emissions that could have a significant adverse impact on the environment. We control them by establishing voluntary emissions standards and procedures that exceed legal requirements.

We periodically conduct drills and review our procedures to ensure that we are prepared in the event of an environmental accident.

To monitor how well these risks are being managed, we regularly assess compliance with applicable laws and regulations, conduct internal audits, perform site patrols, and perform other self-checks. In addition, we strive to improve our risk management by undergoing pollution control and waste control audits by the Seiko Epson Head Office to ascertain whether we are in compliance with laws and our own internal standards and by taking corrective action when problems are found.

In addition, each year our plants invite members of the local community to an environmental meeting. At these meetings we explain Epson Toyocom’s environmental policies, let people see the state of site environmental initiatives, and give tours of plant environmental facilities. We also ask for visitors’ input on our initiatives. In the 2009 fiscal year we held environmental meetings at all five of our plants in Japan.



Emergency drills



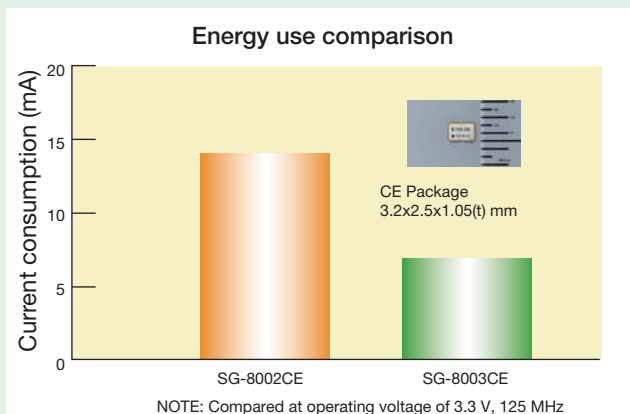
Reporting environmental initiatives to members of the community

■ Combining product performance with eco performance

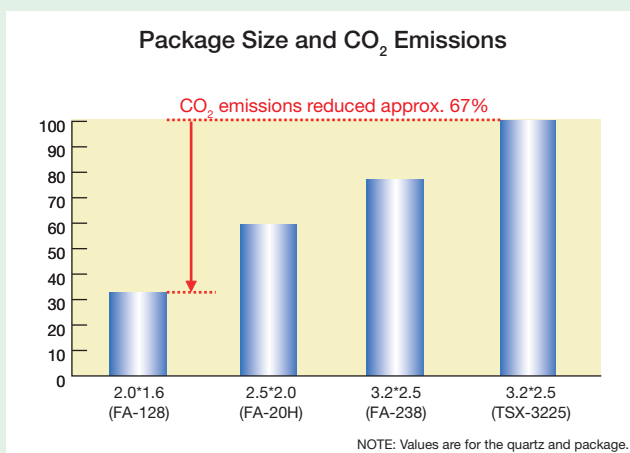
Epson Toyocom aims to simultaneously deliver great product performance along with great eco performance. We are working to create products with even higher added-value by further reducing energy and resources consumption and by eliminating harmful substances, without sacrificing product performance.

Mitigating environmental impact with compact, low-power designs

Our SG-8003 series of programmable crystal oscillators, used in applications ranging from mobile handsets to communications infrastructure, consume 50% less energy than their SG-8002 series predecessors.



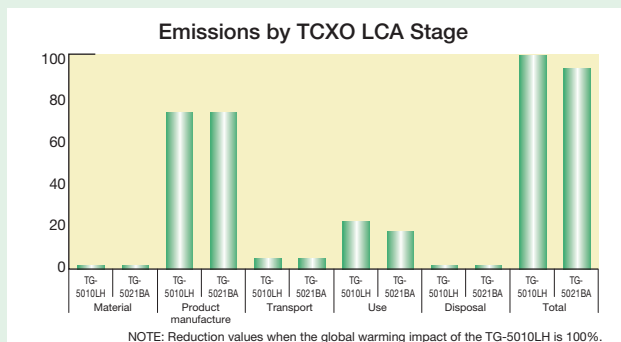
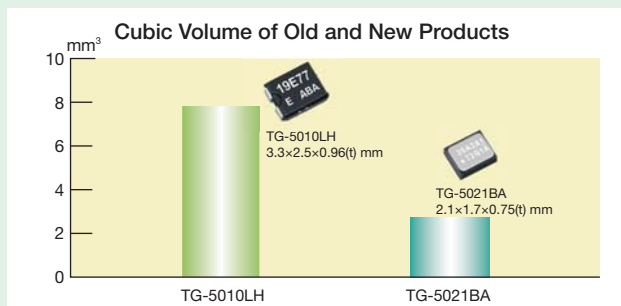
Our surface-mounted MHz-range AT crystal units also offer outstanding product and eco performance. The crystal resonator elements used in these products are efficiently fabricated and their packages miniaturized via the use of QMEMS technology^{*1}, which enables us to downsize products without sacrificing product performance. We are also reducing CO₂ emissions by shrinking package sizes. For example, emissions from the FA-128 crystal unit, with a footprint measuring 2.0 mm x 1.6 mm, are approximately 67% lower than those of the TSX-3225 crystal unit, whose package footprint measures 3.2 mm x 2.5 mm.



*1: QMEMS is a combination of "Quartz," a crystalline material with excellent characteristics such as excellent frequency stability and high precision, and "MEMS" (micro electro mechanical system). QMEMS devices, produced via a microfabrication process on a crystalline material instead of on a semiconductor material like MEMS, offer high performance in a compact package.

■ Initiatives to mitigate global warming impacts across product life-cycles

Epson Toyocom is creating and manufacturing products from a life-cycle perspective to help customers and society reduce their environmental impact. What this means is that, using life-cycle assessment (LCA) techniques, we convert the environmental impacts of a product across its life cycle into a CO₂ equivalent, identify the main factors resulting in environmental impacts, and seek to mitigate the impacts from these at the design stage. We successfully reduced the global warming impact of our TCXO (temperature-compensated crystal oscillator) products, which are widely used in mobile phone reference clock applications, by shrinking the cubic volume of the packages by about 70%.

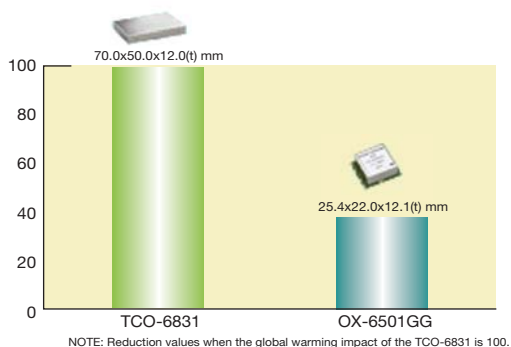


Similarly, we have reduced the global warming impact of new OCXO (industrial oven-controlled crystal oscillator) products, widely used in cellular base stations, by about 64% compared to older OCXO products.

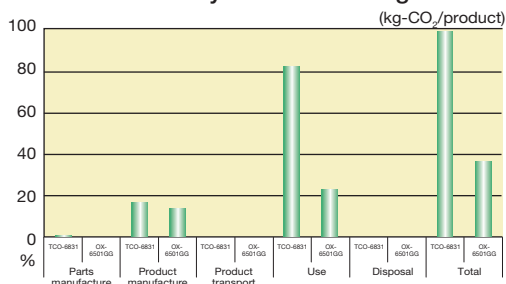
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Creating Environmental Products

OCXO Global Warming Impact (kg-CO₂/product in 2008)



Emissions by OCXO LCA Stage (kg-CO₂/product)



Product Profile

Included among the products we released in fiscal 2009 are many products that delivered both high performance and good environmental performance.

One example is the FC-13A, a tiny, 32.768-kHz crystal unit that operates in high-temperature environments.

Skillful application of QMEMS technology enabled the company to shrink the FC-13A's package to less than one-tenth the cubic volume of its predecessor, the MC-30A. Original packaging technology enables the FC-13A to support an operating temperature range from -40 to 125°C, with automotive-grade levels of performance and reliability.

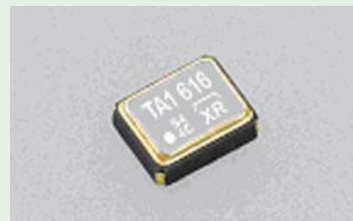


External dimensions: 32 x 15 x 0.9t mm, Max.
Frequency tolerance: ±20 × 10⁻⁶; operating temperature range: -40 to 125°C

Also delivering both economic and ecological benefits is the TG-5005CG, a small, stable TCXO for mobile GPS terminals.

Responding to demand for the kind of small, highly stable TCXOs required for more accurately determining positioning with mobile GPS terminals, Epson Toyocom fabricated ultra-miniature QMEMS

photo AT chips that, despite their size, exhibit outstanding frequency stability and uniformity of characteristics. Using these photo AT chips, Epson Toyocom was able to achieve a TXCO that has very few minute activity dips* and that maintains extremely high stability even when exposed to temperature fluctuations, physical shocks, and other changes in the external environment when receiving GPS signals.



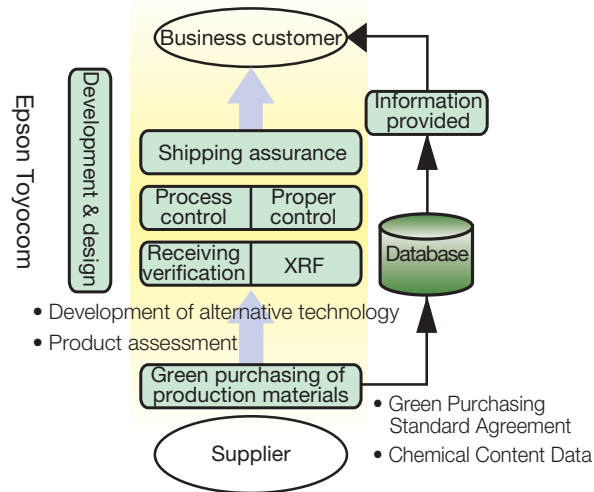
* An abrupt change in the resonant frequency and series resistance of a crystal unit observed when an uninterrupted temperature change is applied to the crystal unit (crystal chip)

Elimination of harmful substances

Controls on substances that may be included in products are becoming increasingly stringent as national legislation evolves around the world. Epson Toyocom has been finding safer alternatives for harmful substances that need to be replaced and has built a management system that enables it to respond with surety to changes in legislation and to the requirements of customers. Substance management requires engaging the entire supply chain and makes winning the understanding and cooperation of suppliers and customers alike essential.

We practice eco-considerate product creation by carefully controlling the chemicals and substances that go into our products and by eliminating harmful substances by, for example, implementing a "green" purchasing program for production materials and by assessing product substance performance at the design phase.

Initiatives to Manage Chemical Substances Included in Products

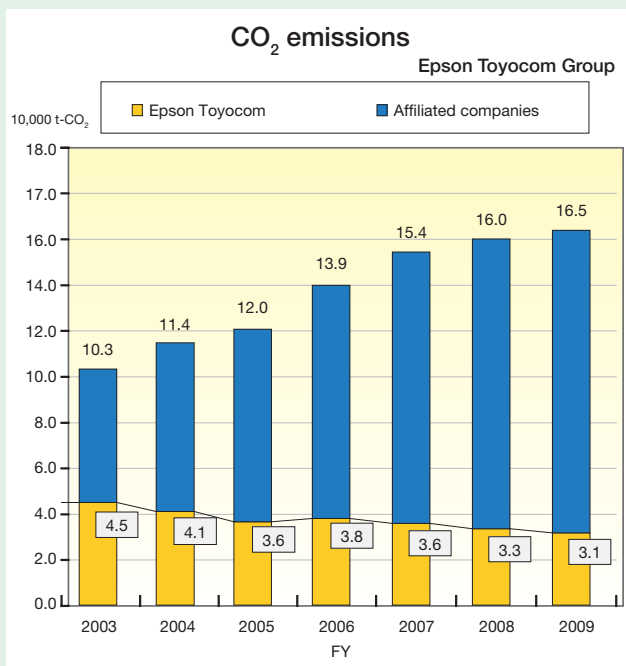


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Preventing Global Warming

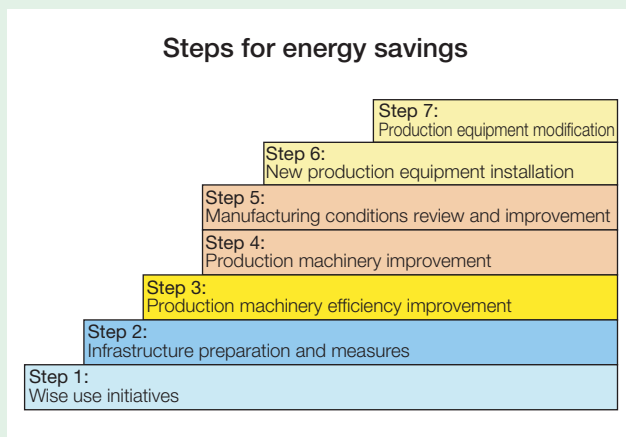
FY2009 results

Epson Toyocom is reducing its energy consumption to limit emissions of CO₂, a primary cause of global warming. We are also finding substitutes for other greenhouse gases, such as perfluorocarbons (PFCs). In FY2009 our measures targeting CO₂ attempted to reduce these emissions by 6,000 t-CO₂ worldwide. Nevertheless, total CO₂ emissions ended up rising 3% year-on-year to 165,000 t-CO₂ due to increased use of energy overseas and of greenhouse gases (GHG).



Energy-saving initiatives

Epson Toyocom's energy saving initiatives consist of seven steps. These steps are successively scaled according to each plant's circumstances and the characteristics of the products they produce.



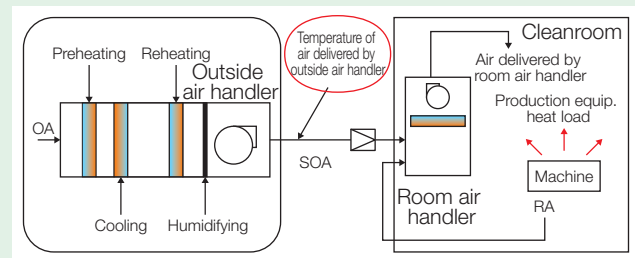
Examples of initiatives

Epson Toyocom's Energy Conservation Project engages staff from plants in Japan in a cross-organizational effort to give an extra push to our energy-saving initiatives. Members meet regularly to check on activity progress, share success stories from each site and work to implement those successes evenly.

Lowered temperature of air introduced by outside air handler (Ina Plant)

The Ina Plant uses an outside air handler to supply outside air to cleanrooms, where it is needed to ventilate equipment and maintain room air pressure. The outside air handler conditions the outside air so as to maintain a constant, year-round air temperature and humidity.

By lowering the temperature of this air supplied to the cleanroom, we successfully reduced the amount of energy used by the outside air handler to reheat the air and reduced the amount of energy used by the room air handlers to cool the air.



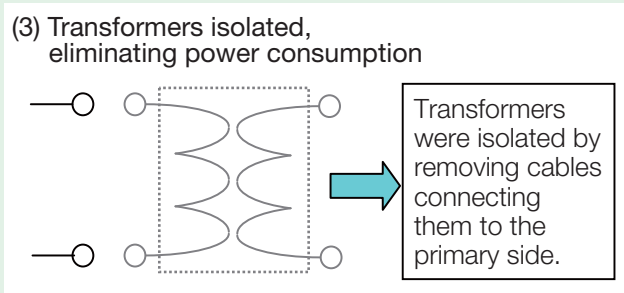
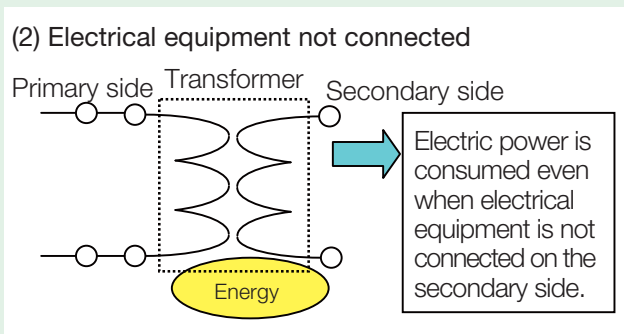
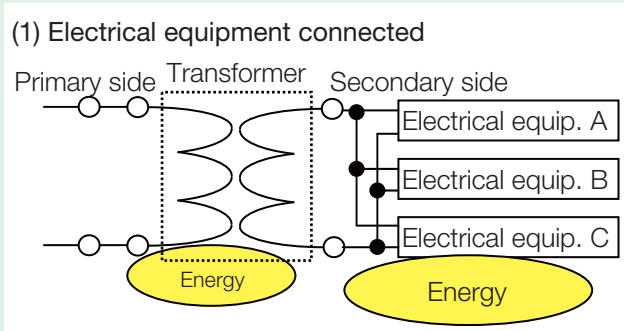
Reducing power use by isolating transformers at the Shonan Plant

Electrical equipment used at the Shonan Plant runs on electric power supplied from the secondary side of substation transformers. However, the transformers consume electricity even when electrical equipment on the secondary side is not in use, so simply shutting down the electrical equipment did not result in complete energy conservation. Therefore, to save energy during extended plant shutdowns, we change the electrical wiring for high voltage in the substation to isolate the four transformers.

Environmental Report 2010

Preventing Global Warming

This effort has enabled us to reduce annual electrical power use by 98,112 kWh (the equivalent of 37.1 t-CO₂).



Optimization of air-cooling chiller temperature settings at the Fukushima Plant

Cleanroom air is cooled by making chilled water with an air-cooling chiller. The chiller was set to maintain a chilled water temperature of 8°C throughout the year. However, since the cooling load is lower in the winter and the milder months, we changed the setting to 12°C, and increased the water flow rate.

This reduced the electrical power load on the air-cooling chiller, reducing annual CO₂ emissions by 95 tons.



Changing of the heat source for purified water heating in Wuxi, China

We reduced the amount of steam used as the source for heating purified water lines and the amount of chilled water for the cooling heat source of the chilled water lines. This enabled us to reduce CO₂ emissions during steam generation and refrigeration while reducing our costs for steam and electric power. Specifically, waste heat is recovered from the chilled water lines by a heat exchanger, and tap water for the purified water is heated by the heat exchanger installed in the purified water line. The result is an annual savings of 338 t-CO₂.

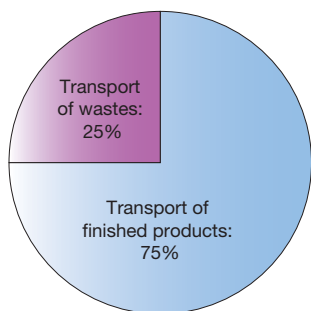


■ Other actions for preventing global warming

Aside from CO₂ emissions from energy use, our emissions also come from transport and the atmospheric release of chemicals used in production processes. Epson Toyocom is working on substitutes for greenhouse gases used in production processes and is developing production processes that do not emit such substances to the atmosphere.

Epson Toyocom monitors the amount of CO₂ emissions resulting from transportation of products and waste within Japan.

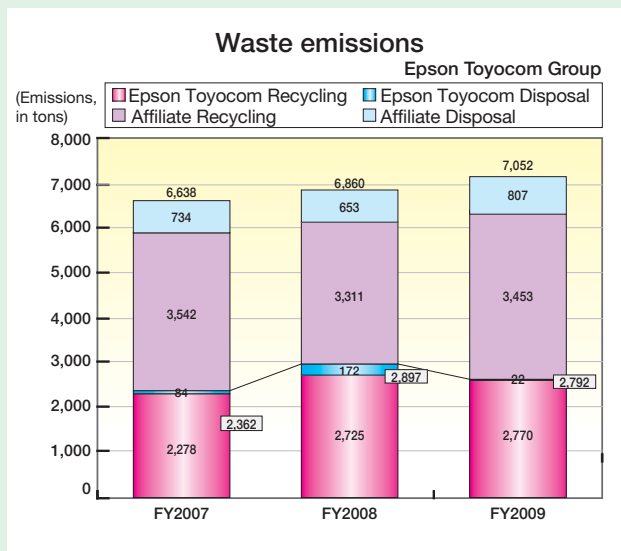
CO₂ emissions from transport
(from transport within Japan in FY2009)



Total:
314 t-CO₂

■ Waste reduction: FY2009 results

Epson Toyocom has endeavored to use resources more effectively by reducing waste emissions and by recycling. However, total emissions in FY2009 (total emissions of waste and valuable resources) rose 3% year-on-year to 7,052 tons. The recycling rate was flat year-on-year, at 88%.



■ Zero Emissions initiatives

Even after reaching the goal of recycling 100% of the emissions generated at all major Epson Toyocom Group sites by the end of the 2007 fiscal year, we have been working on ways to further increase the recycling rate and reduce our waste processing costs by, for example, reducing the amount of waste generated in the first place and by doing an even better job of sorting the waste. In addition, we periodically evaluate our waste management service providers and verify that state of recycling.

In fiscal 2009 we evaluated 25 such providers in Japan and verified that all were properly processing the waste.

■ Conversion to new forms of energy and energies with low environmental impact

Epson Toyocom is switching to clean energy with lower CO₂ emissions.

Solar power facilities
(Ina Plant)

This plant has installed 420 solar panels, each with an output capacity of 120 W.



Liquefied natural gas
(Ina Plant)

The Ina Plant's boilers use liquefied natural gas (LNG), a low-emissions fuel.

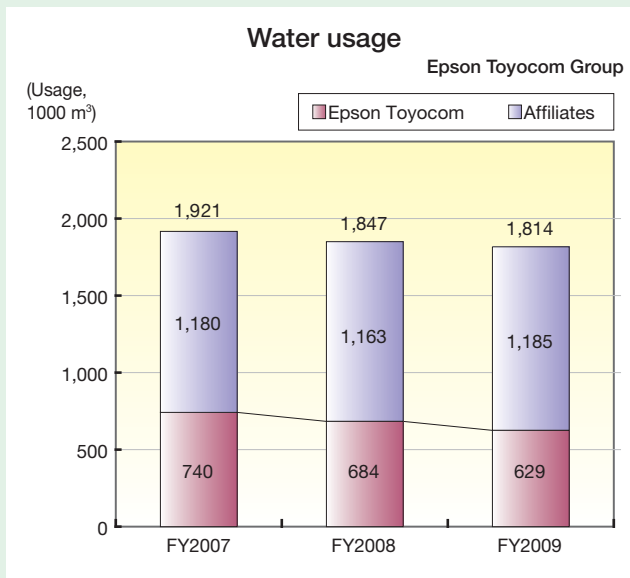


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Substance Control

Water reduction: FY2009 results

Reducing water usage in the workplace is a key part of Epson Toyocom's resource-saving programs. Our water usage decreased 2% year-on-year in FY2009, to a total of 1,814,000 cubic meters.

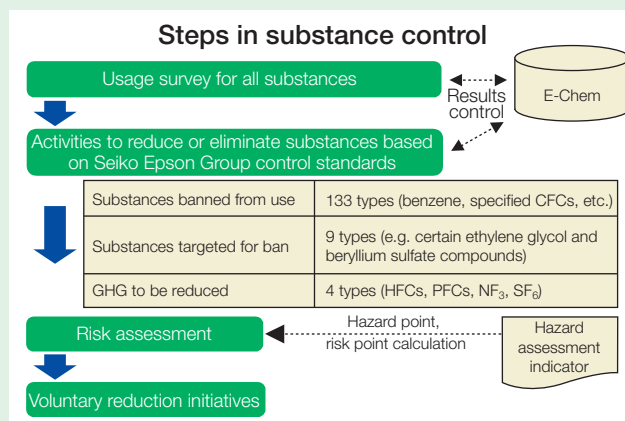


Stance on chemical management initiatives

Epson Toyocom uses a large number of substances in its product manufacturing processes.

Epson Toyocom uses E-Chem, the Epson Group's substance data control system, for our substance control to enhance the efficiency with which data on chemical use is gathered, as well as the accuracy of this data.

In addition, each plant is voluntarily working to reduce substances of its own choosing.



PRTR initiatives

We collect PRTR data required by the Law Concerning the Promotion of Monitoring and Management of Chemical Substance Emissions and report to the government as necessary.

Aggregating period: April 2009 - March 2010

Ina Plant

Substance No.	Substance name	Released volume (kg)				Transferred (kg)	
		Atmosphere	Public water	Soil	Landfill	Sewer	Wastes
283	Hydrogen fluoride and its water-soluble salts	48					4,700

Fukushima Plant

Substance No.	Substance name	Released volume (kg)				Transferred (kg)	
		Atmosphere	Public water	Soil	Landfill	Sewer	Wastes
63	Xylene	18					24

Miyazaki Plant

Substance No.	Substance name	Released volume (kg)				Transferred (kg)	
		Atmosphere	Public water	Soil	Landfill	Sewer	Wastes
63	Xylene	28					12
283	Hydrogen fluoride and its water-soluble salts	180					18,000

Akita Epson Corporation

Substance No.	Substance name	Released volume (kg)				Transferred (kg)	
		Atmosphere	Public water	Soil	Landfill	Sewer	Wastes
63	Xylene	14					140
283	Hydrogen fluoride and its water-soluble salts	200					20,000

* The Shonan Plant had no substances subject to legal reporting (that is, used in volumes of at least one ton annually).

■ Environmental training

For an environmental initiative to succeed, employees have to understand the underlying environmental problems and be aware of the proper actions to take. Epson Toyocom designs its environmental training systematically, providing both general and specialized training tailored to specific roles and needs.

Environmental training system		
	Rank-specific training (mandatory)	Specialized training (selective)
Managers	Training for new managers	Internal auditor training Pollution control training Waste control training
General employees	Basic training	
New employees		

■ Awareness-raising initiatives

Epson Toyocom has named June “Environment Month” and February “Energy Conservation Month.” During these two months we focus on raising environmental awareness and implementing key actions. Both months feature a number of campaigns and internal patrols to see how we are doing.

We conducted a variety of eco campaigns during Environment Month in 2009. For example, we created and distributed guidelines for using the energy-saving settings on office equipment to save energy, and we conducted self-checks in each workplace to evaluate and improve resource conservation and waste management. In addition, we recruited ideas for eco products, set days when all employees at all plants are required to leave the office by a set time to save energy, and instituted “no-car days” to encourage use of public transportation and other low-emission modes of commuting.

During Energy Conservation Month we checked and evaluated the state of energy conservation in offices based on a checklist. We then took steps to strengthen energy-saving actions by enforcing basic, good energy-saving practices and making improvements where needed. Other activities included the ongoing recruitment of ideas for eco products and calls for participation in an “eco account book” program, wherein employees keep track of their energy use and associated CO₂ emissions.

■ Community engagement

To be a good, trusted company, Epson Toyocom actively contributes to the communities in which it operates by participating in local cleanup efforts, supporting environmental education for children, leading reforestation projects, and engaging communities in many other ways.

Cleanup efforts



Ina Plant



Shonan Plant



Fukushima Plant



Miyazaki Plant

Environmental education for children



Kuala Lumpur, Malaysia



Chachoengsao, Thailand

Reforestation projects



Chachoengsao, Thailand



Wuxi, China

Community engagement



Youth futsal tournament sponsor



J-League Soccer Green Energy sponsor

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Reference: Environmental Data

Site environmental data

Head Office	421-8 Hino, Hino-shi, Tokyo 191-8501	Established 1985
Headquarter functions and crystal device sales & marketing	Tel 042-581-1707 Fax 042-581-1722	

* Head Office is located in Seiko Epson Corporation's Hino Office, so corresponding environmental data is given by Seiko Epson Corporation.

Shonan Plant	2-1-1, Koyato, Samukawa-machi, Koza-gun, Kanagawa 253-0192	Established 1962
Quartz device development and design	Tel 0467-74-1131 Fax 0467-74-1179	

Land area	Building floor area	Zoning	Power consumption	Total emissions	Water usage	Discharge point	Units w/ PCBs	PRTR
86,000 m ²	30,000 m ²	Semi-industrial	3,468,000 kWh	118 t	31,766 m ³	River, sewer	2,073	N/A
Water quality (river)	PH	BOD (mg/l)	COD (mg/l)	SS (mg/l)	Mineral oil (mg/l)	Plant and animal oil (mg/l)	Coliform bacilli (per/cm ²)	
Legal limit	5.8 - 8.6	60	-	90	5	-	-	
Highest measured	5.9 - 7.5	18.0	-	24	Not detected	-	-	
Atmosphere	Number of boilers	NO _x (Nm ³ /h)	SO _x (Nm ³ /h)	Particulate matter (g/h)				
Legal limit	-	0.148	0.37	294				
Highest measured	4	0.079	0.045	6.3				

Ina Plant	8548, Nakaminowa, Minowa-machi, Kami-Ina-gun, Nagano 399-4696	Established 1959
Quartz device development, design and production	Tel 0265-79-2481 Fax 0265-70-6821	

Land area	Building floor area	Zoning	Power consumption	Total emissions	Water usage	Discharge point	Units w/ PCBs	PRTR
41,000 m ²	25,000 m ²	Semi-industrial	15,455,000 kWh	550 t	109,912 m ³	River, sewer	60	Refer to page 12
Water quality (river)	PH	BOD (mg/l)	COD (mg/l)	SS (mg/l)	Mineral oil (mg/l)	Plant and animal oil (mg/l)	Coliform bacilli (per/cm ²)	
Legal limit	5.0 - 9.0	600	-	600	5	30	-	
Highest measured	7.0 - 7.4	8.9	6.5	15	0.4	0.38	15	
Atmosphere	Number of boilers	NO _x (ppm)	SO _x (Nm ³ /h)	Particulate matter (mg/Nm ³)				
Legal limit	-	-	2	-				
Highest measured	3	47	0.045	5				

Hobara Plant	60, Higashinozaki, Hobara-machi, Date-shi, Fukushima 960-0671	Established 1973
Quartz device production	Tel 024-575-4161 Fax 024-575-2505	

Land area	Building floor area	Zoning	Power consumption	Total emissions	Water usage	Discharge point	Units w/ PCBs	PRTR
36,000 m ²	14,000 m ²	Industrial	11,614,000 kWh	146 t	34,970 m ³	River, sewer	73	N/A
Water quality (river)	PH	BOD (mg/l)	COD (mg/l)	SS (mg/l)	Mineral oil (mg/l)	Plant and animal oil (mg/l)	Coliform bacilli (per/cm ²)	
Legal limit	5.8 - 8.6	25	-	70	1	-	3,000	
Highest measured	6.4 - 7.4	2.9	-	2	0.6	-	35	
Atmosphere	Number of boilers	NO _x (ppm)	SO _x (Nm ³ /h)	Particulate matter (mg/Nm ³)				
Legal limit	-	180	6.4	300				
Highest measured	4	47	Not detected	0.01				

Fukushima Plant	65-1, Minamihara, Hansaki, Odaka-ku, Minamisoma-shi, Fukushima 979-2162	Established 1977
Quartz device production	Tel 0244-44-5111 Fax 0244-44-5130	

Land area	Building floor area	Zoning	Power consumption	Total emissions	Water usage	Discharge point	Units w/ PCBs	PRTR
45,000 m ²	13,000 m ²	Undesignated	14,787,000 kWh	97 t	90,907 m ³	River	0	Refer to page 12
Water quality (river)	PH	BOD (mg/l)	COD (mg/l)	SS (mg/l)	Mineral oil (mg/l)	Plant and animal oil (mg/l)	Coliform bacilli (per/cm ²)	
Legal limit	5.8 - 8.6	25	-	70	5	10	3,000	
Highest measured	7.2 - 7.8	5.5	2.8	5.2	0.7	0.7	2,300	
Atmosphere	Number of boilers	NO _x (ppm)	SO _x (Nm ³ /h)	Particulate matter (mg/Nm ³)				
Legal limit	-	180	3.7	300				
Highest measured	2	31	Not detected	Not detected				

Miyazaki Plant	1860, Hei, Imaizumi, Kiyotake-cho, Miyazaki-gun, Miyazaki 889-1602	Established 1985
Quartz device production, artificial crystal ore development and production	Tel 0985-85-5800 Fax 0985-85-5801	

Land area	Building floor area	Zoning	Power consumption	Total emissions	Water usage	Discharge point	Units w/ PCBs	PRTR
37,000 m ²	14,000 m ²	Outside urban plan	17,884,000 kWh	1,881 t	361,291 m ³	River	0	Refer to page 12
Water quality (river)	PH	BOD (mg/l)	COD (mg/l)	SS (mg/l)	Mineral oil (mg/l)	Plant and animal oil (mg/l)	Coliform bacilli (per/cm ²)	
Legal limit	5.8 - 8.6	25	-	30	5	-	1,000	
Highest measured	6.7 - 7.4	17	9.5	11	Not detected	-	30	
Atmosphere	Number of boilers	NO _x (ppm)	SO _x (Nm ³ /h)	Particulate matter (mg/Nm ³)				
Legal limit	-	180	3.89	300				
Highest measured	2	37	Not detected	Not detected				

* Power consumption: Includes independently generated power, solar power, etc.

* -: No legal limit, or no measurement taken

Environmental Report 2010

Reference: Environmental Data

CO₂ emissions (unit: tons)

		FY2008	FY2009
Shonan	Energy	1,870	1,527
	Greenhouse gases	555	37
	Total	2,425	1,564
Ina	Energy	7,875	7,549
	Greenhouse gases	37	396
	Total	7,912	7,945
Hobara	Energy	5,333	4,704
	Greenhouse gases	1,481	1,147
	Total	6,814	5,851
Fukushima	Energy	6,619	6,488
	Greenhouse gases	814	207
	Total	7,433	6,695
Miyazaki	Energy	9,054	8,480
	Greenhouse gases	30	105
	Total	9,084	8,585
Epson Toyocom total	Energy	30,751	28,749
	Greenhouse gases	2,917	1,892
	Total	33,668	30,641
Affiliated companies (global)	Energy	88,566	92,820
	Greenhouse gases	38,329	41,440
	Total	126,895	134,260
Epson Toyocom Group (Epson Toyocom + affiliated cos.)	Energy	119,317	121,569
	Greenhouse gases	41,246	43,332
	Total	160,563	164,901

Emissions (units: tons)

		FY2008	FY2009
Shonan	Amount of waste	5	5
	Recycled volume	88	113
	Total	93	118
Ina	Amount of waste	3	2
	Recycled volume	611	548
	Total	614	550
Hobara	Amount of waste	1	2
	Recycled volume	160	144
	Total	162	146
Fukushima	Amount of waste	29	11
	Recycled volume	44	86
	Total	73	97
Miyazaki	Amount of waste	133	2
	Recycled volume	1,822	1,879
	Total	1,955	1,881
Epson Toyocom total	Amount of waste	172	22
	Recycled volume	2,725	2,770
	Total	2,897	2,792
Affiliated companies (global)	Amount of waste	653	807
	Recycled volume	3,311	3,453
	Total	3,964	4,260
Epson Toyocom Group (Epson Toyocom + affiliated cos.)	Amount of waste	825	829
	Recycled volume	6,036	6,223
	Total	6,860	7,052

Water usage (units: m³)

		FY2008	FY2009
Shonan	Tap water	15,709	15,622
	Well water	18,772	16,144
	Total	34,481	31,766
Ina	Tap water	18,768	15,548
	Well water	148,212	94,364
	Total	166,980	109,912
Hobara	Tap water	34,698	34,970
	Well water	0	0
	Total	34,698	34,970
Fukushima	Tap water	4,186	4,278
	Well water	89,826	86,629
	Total	94,012	90,907
Miyazaki	Tap water	13,861	11,469
	Well water	340,273	349,822
	Total	354,134	361,291
Epson Toyocom total	Tap water	87,222	81,887
	Well water	597,083	546,959
	Total	684,305	628,846
Affiliated companies (global)	Total	1,161,619	1,185,448
Epson Toyocom Group (Epson Toyocom + affiliated cos.)	Total	1,845,924	1,814,294

ISO 14001 certifications list

Unit acquiring	When acquired	Certifying organization
Combined certification (Head Office, Shonan, Ina, Hobara, Odaka, Miyazaki)	1998.04	DNV

* Combined certification was acquired in December 2007. However, the acquisition date is inherited from the Shonan Plant, which was the basis for the combined certification.

Affiliated companies

Akita Epson Corporation	2001.03	BVC
Epson Atmix Corporation	2004.03	BVC
Epson Toyocom Malaysia Sdn. Bhd.	1999.04	SIRIM
Epson Precision (Philippines) Inc.	2000.02	TÜV
P.T. Epson Toyocom Indonesia	2000.11	DNV
Epson Toyocom (Wuxi) Co., Ltd.	2004.04	DNV
Epson Toyocom (Thailand) Ltd.	2004.11	ITS
Epson Toyocom Suzhou Co., Ltd.*	2007.06	CCCI

*Certification newly acquired in June 2007 following company spin-off.

Scope of environmental data reporting

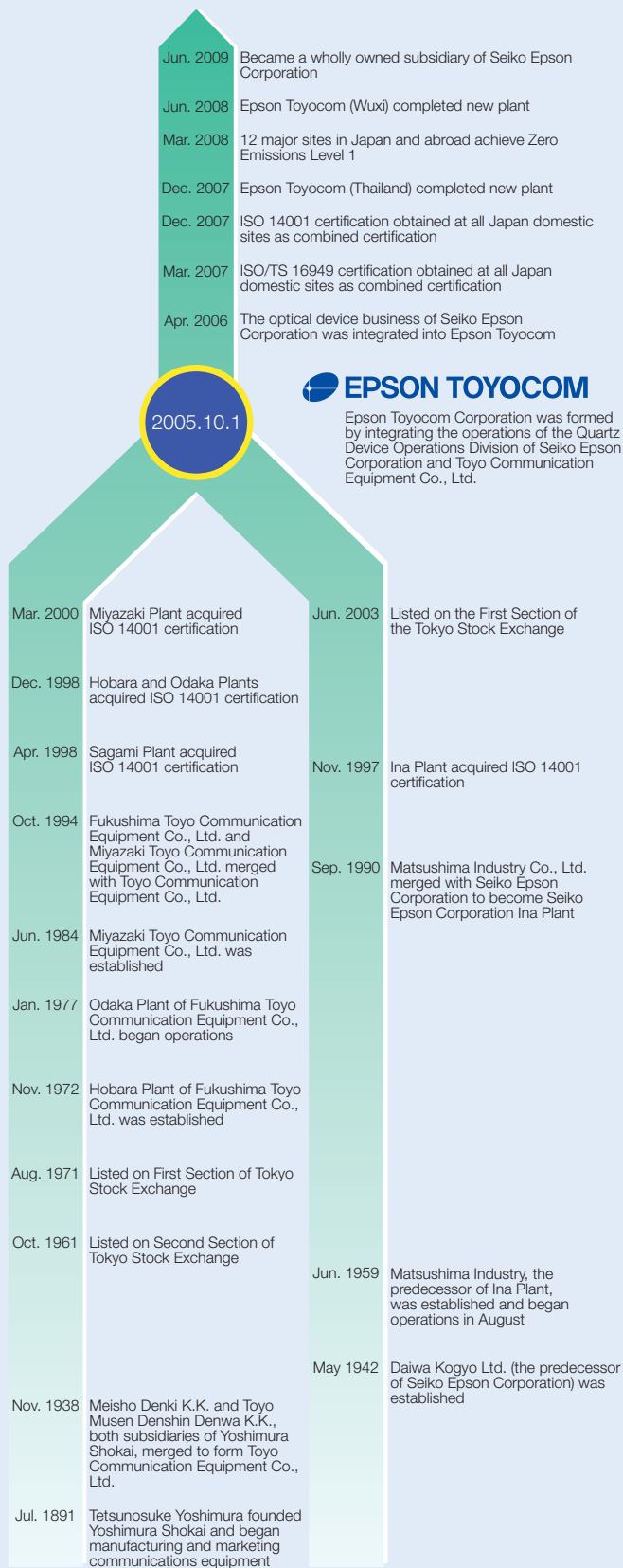
- Epson Toyocom Corporation
Shonan Plant, Ina Plant, Hobara Plant, Fukushima Plant, Miyazaki Plant
*Head Office is located in Seiko Epson Corporation's Hino Office, so corresponding environmental data is given by Seiko Epson Corporation.
- Affiliated companies
Toyocom Shoji Co. Ltd., Toyocom Systems Corp., Epson Atmix Corp.*, Akita Epson Corp.*
Epson Toyocom Malaysia Sdn. Bhd. Epson Toyocom Suzhou Co., Ltd. Epson Precision (Philippines) Inc.*
P. T. Epson Toyocom Indonesia Epson Toyocom Seattle Inc. Epson Toyocom (Thailand) Ltd.
Epson Toyocom (Wuxi) Co., Ltd.
*Environmental burdens resulting from these companies' crystal device businesses have been aggregated.
- Epson Toyocom Group
Total of (1) and (2) above.

Number rounding

- Numbers less than a full unit have been rounded and may not match total.

Definitions

- Amount of waste = amount of industrial waste + amount of general waste
- Amount recycled = amount of industrial waste recycled + amount of general waste recycled + amount of valuable resources (the amount recycled does not include the amount of certain recovered goods as designated by the manufacturer)


TOYOCOM
EPSON

What is a crystal device?

We in the modern age have become dependent on a variety of different conveniences. We all have different needs, of course, but if asked what modern convenience they would have a hard time living without, many people would probably name some form of electronic device or system: a cell phone, PC, TV, or watch, perhaps. As home electronics and home appliances, as tools for work and play, and as means of communication, electronics are an integral, embedded part of our lives.

Though they come in all sorts of shapes and sizes, and perform myriad functions, the operations of these electronic devices and systems are orchestrated by critical electronic components called "crystal devices."

If semiconductor chips are the brains of industry, then crystal devices are the heart and pulse.

Familiar products that use crystal devices

= Examples from a cell phone =



Tuning fork crystal unit

Timekeeping clock
IC sub-clock

TCXO/AT crystal unit

Wireless communications clock
IC main clock

VCXO/AT crystal unit

TV tuner clock

Gyro-sensor

Digital camera image
stabilization and detection

SAW filter

For wireless communications

*These are typical examples of the use of crystal devices.

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