



# Shin-Etsu Polymer Sustainability Report 2010



Greetings

# Fulfilling social responsibilities, strengthening corporate culture corporate value

In September 2009, the Japanese government announced a positive mid-term target of a “25% reduction of greenhouse gases by fiscal 2020 compared with the reference year of fiscal 1990,” attracting global attention. In March to achieve this target, the government decided upon the long-term target for fiscal 2050 (80% reduction against that of 1990) and introduced the “Basic Law for Prevention of Global Warming,” announcing that the government will take every political measure such as the establishment of an emission trading system, revision of the tax system and an expansion of the renewable energy purchase system.

When looking at the Kyoto Protocol target (a 6% reduction between fiscal 2008-2012 when compared with that of the reference year of fiscal 1990,) while the emission increased by as much as 8.4% in 2007 against that in 1990, the amount was reduced by 6.8 point in fiscal 2008 compared with the previous year (or a 1.6% increase when compared with fiscal 1990) affected by underperformance due to the Lehman shock, and in consideration of the government’s emissions quota purchased from other countries plus the amount to be absorbed by forests (total 6.1%,) the target is expected to be satisfied. On the other hand, from this fiscal year, the revised Act on Promotion of Global Warming Countermeasures and the revised Energy Saving Law are imposed upon business operators like our company for more strict energy management requirements, and we are also required to respond to municipal laws that are more strict than the measures taken by the government, for example, regulations of total CO<sub>2</sub> emission and emission trading systems by Saitama and other prefectures.

Paying close attention to trends associated with the global environment, we observe and properly respond to both domestic and international environmental laws and regulations.

Considering compliance with social rules and accomplishment of social responsibilities as the absolute condition for corporate continuity, we thoroughly implement compliance and risk management, work hard to establish and properly operate an internal control system and target strengthening corporate culture and improving corporate value.

## Cost Half Plan

In September 2010, we celebrate our 50th anniversary, and taking this as a starting point toward new growth and, in order to maintain sustainable growth regardless of business conditions, we are making efforts to reorganize our business structure responding to market requirements and quickly build corporate strength toward the next stage of development.

The Cost Half Plan promoted since fiscal 2003 is to establish such a strength, and, as part of it, the Green Activities driven for its realization has greatly contributed to the elimination of waste, improvement of efficiency and strengthening of our competitive edge, along with the Six Sigma and TPS initiatives.

## The Green Activities

We position Green Activities as “an effort to improve productivity from the viewpoint of the environment,” and ever since its start in fiscal 2000, we have achieved substantial results, driven by global environment conservation and improvements in productivity.

Based on the achievements and review of the Second Mid-term Plan (fiscal 2006-2008,) in the Third Mid-term Plan (fiscal 2009-2011) of the Activities, we have set targets of a “35% reduction of CO<sub>2</sub> emission per basic unit of energy when compared with that of the reference year or fiscal 1994,” “maintenance and continuance of zero emission” for waste reduction and a “3% reduction of emissions per basic unit of waste when compared with that of fiscal 2008,” making fully committed efforts to achieve these targets.

In April 2010, we revised the Basic Environmental Policy and added a new item: “By grasping and assessing the impact of business activities upon the eco-system and reducing its influence, we make efforts to the conservation and sustainable use of biodiversity.” We structure and strengthen our initiatives on preserving biodiversity that have conventionally been conducted in business activities.



# targeting and improving

President



**Hiroshi Akazawa**

September 2010



## Supply chain/green procurement management

Our Group has established a system for the management of chemicals contained in products at each production site in response to customer's green procurement requirements and created the "Global Environmental Communication System" to centrally control the entire Group, including overseas sites. We have also strengthened our supply chain management including environmental audits of OEM partners.

To assure compliance with European REACH Regulation that were enforced in June 2007, Environmental Management Representatives from headquarters in collaboration with divisions and subsidiaries in Europe have been steadily addressing the requirements. In April 2009, we joined the Joint Article Management Promotion-consortium (JAMP) and have established a structure to communicate the information on contained chemicals among suppliers and customers with MSDSplus and AIS compliant with European REACH Regulation.

## Product development in consideration of the environment

Recognizing that new product development is an absolute requirement for corporate growth, the Group has a cross-functional development structure throughout the company in order

to develop new products in domains beyond the framework of divisions, along with the development of relevant new products from divisions engaged in operations close to markets and customers. The core of the structure is our R&D Center, and the progress of development themes are reported to management in "development meetings."

## Sustainability Report 2010

This Report conforms to the "Environmental Reporting Guidelines: Towards a Sustainable Society (Fiscal Year 2007 Version)" of the Ministry of the Environment and reports on environmental, economic and social initiatives. Also, we aim to create an easy-to-understand report featuring employees independently addressing their jobs, emphasizing environment-friendly products, case studies of environmental conservation activities, and an introduction of overseas sites. In last year's edition, we focused on our general ideas about corporate social responsibility, and from this year on, we move from generals to particulars and discuss supply chain/green procurement management.

We received third-party comments from Mr. Kozuma, Professor of Sophia University, as was the case with last year's edition, and we shall take advantage of them for our future efforts and initiatives.

By contributing to the development of society through providing high quality products, technologies and services and by carrying out this growth with a balance of economic, environmental, and social aspects, we positively participate in the formation of a society toward sustainable development.

# Management Philosophy/ Environmental Policy



We display at all locations both at home and abroad

## Corporate Action Policy

**Unlimited challenges and growth!**  
We work to become a company full of creativity and vitality by realizing hopes and visions toward the future.

- 1 We serve as a strong and reliable partner with companies challenging to grow in their markets through innovative products and services.
- 2 We always consider and make proposals from the viewpoint of our customers and globally provide products and services that contribute to their value creation and growth.
- 3 We assume our corporate responsibilities toward shareholders, customers, employees, communities, and the global environment.

## Basic Environmental Principles

**Basic Policy**  
Shin-Etsu Polymer group recognizes that the work for environmental conservation is the one of highest priority issues for our operation. Therefore we are working hard to become a part of building a recycling economic society through our responsibilities required.

### Action Policy

- 1 We are rebuilding the organization and systems to work for efficient and continuous environmental activities.
- 2 We observe law and regulations for resource conservation, energy saving, waste reduction, recycling and the proper handling of environmentally harmful substances. In addition, we set challenging goals and try to achieve it within our own manner in technical and economic resources.
- 3 We evaluate the environmental impacts of all phases from purchase and production through usage and disposal during the new product development stage and thus reduce its environmental impact.
- 4 We strive for the conservation and sustainable use of biological diversity by understanding and evaluating the impact on ecosystems from business activities, and by reducing this impact.
- 5 We provide internal education programs to achieve understanding and awareness of basic environmental policies for all employees.
- 6 We disclose the information of our environmental activities and make efforts to coexist with the community.

## Corporate Action Policy

- 1 We have a pride and awareness as employees of Shin-Etsu Polymer Co., Ltd. and its Group companies and do our best to become a company trusted by society by always maintaining a law-abiding spirit, complying with laws, regulations, internal codes and rules and conducting fair and highly transparent corporate activities.
- 2 We disclose a comprehensive range of corporate information where necessary and appropriate and promote communication with society as well as stockholders, investors, customers and communities as an "open company."
- 3 We respect the histories, cultures, customs, etc. of individual countries and regions, work at developing business based on mutual trust, and make efforts to coexist with communities.
- 4 We recognize global environmental preservation as one of our first-priority challenges and, by fulfilling social responsibilities required, actively participate in the establishment of a recycling-oriented economic society aiming for sustainable development.
- 5 Through business activities, we try to develop and manufacture environmentally friendly products with high performance, contribute to an affluent society and preservation of the environment. Furthermore, we implement green procurement, properly control chemical substances and comply with regulations on substances contained in products.
- 6 We commit ourselves to meet the requirements of customers and consumers and make efforts to provide attractive, safe and quality products and services that are highly satisfactory. Furthermore, we carefully handle personal information associated with customer's privacy and strictly control such information so that no information leakage or illegal use should occur.
- 7 We respect the principle of free competition and always promote fair trade. We also build transparent, fair and healthy relations with customers and consumers.
- 8 We respect human rights, personality and diversity of employees, realize fair treatment and establish a working environment where they can exert their abilities, skills and vitality. We comply with occupational laws and regulations and conduct no inhumane labor practice such as child or forced labor.
- 9 We maintain healthy and normal relations with governments and their administrations.
- 10 We confront antisocial groups and organizations that threaten social order and security with a resolute attitude.
- 11 We, as "good corporate citizens" carry our social action programs in a positive manner.

SUSTAINABILITY

## Customer Supply Chain

# To meet the requirements of green procurement management

In the last ten years, customers have been placing top priority on suppliers of materials, parts, and components and to the establishment of a management system of chemicals contained in products. We hosted a round-table discussion about how we have responded and how we respond to this requirement by executive managers, and other employees responsible for environmental control and technology (Environmental Administrators) of business units, groups, and plants.

**Moderator Ishii (hereinafter referred to as moderator)** In the 2009 edition, we had a round-table discussion on CSR management in general, and this year, our main topic is the "environment" (management of chemicals contained in products), in other words, green procurement.

**Kawamura, Director (hereinafter referred to as Kawamura)** CSR items most required by customers are the "environment" and "information security." For example, a "CSR procurement survey" by Company P that holds green partner renewal audits every year is comprised of two audit sheets (① environmental quality assurance and ② information security.) Here, environmental quality assurance means management prevents products being supplied from containing prohibited and controlled substances (Prohibited Substances.)

**Moderator** When did customers start to conduct suppliers' green procurement surveys and for what reason?

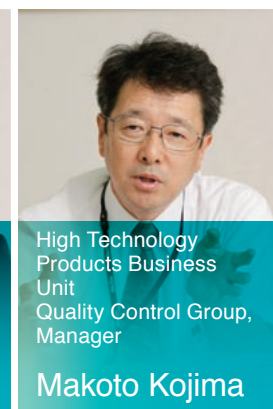
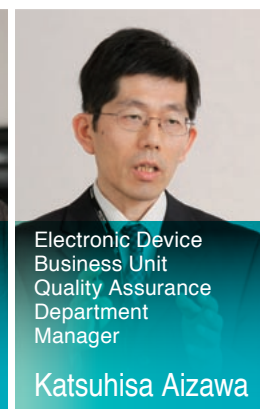
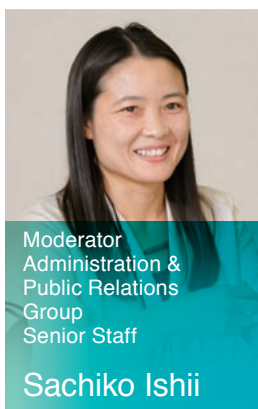
**Nakamura, Manager (hereinafter referred to as Nakamura)** One of the backgrounds was EU RoHS Directives. This is the directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment whose draft was presented in the summer of 1998 by the European Committee and officially proposed in June 2000. The first green procurement survey by the customer was "Chemical Substance Management Rank Guidelines Vol. 1" delivered by Company P, which asked us to conduct an investigation on prohibited substances contained in products. Another background was the incident of Cd contained in a part used in a game console in Europe (October 2001), which led to Company S's Green Partner Environmental Quality Certification

System (GP Certification). The drastic increase in customers' green procurement surveys since 2002 was due to the impact this incident had upon the electric and electronic industries.

**Moderator** Our Kodama Plant, Shiojiri Plant of Shinano Polymer Co., Ltd. and Kurihashi Plant of Urawa Polymer Co., Ltd. received the first environmental quality assurance system audits by Company S (Environmental Audits), and these three plants acquired GP Certification for the first time. How was the survey conducted at the Kodama Plant?

**Arai, Manager (hereinafter referred to as Arai)** In September 2002, auditors from Company S's controlled materials (controlled domain at Company P) visited us, and as the main (mother) plant of Shin-Etsu Polymer, we received environmental audits. At that time, we were told by the auditors, "The main purpose of this system is to establish a management system of chemical substances contained in products so that no environmentally controlled substances are "contained," "used" or "discharged" throughout all the processes from the raw materials stage to product shipments." (Refer to the illustration on page 6) The first edition of the SS-00259 technical standards of Company S (enforced on July 1, 2002) designates 18 substance groups including 6 substances specified in RoHS as environmentally controlled substances. On that day, Mr. Nakamura, manager of the Technology Group, attended the audit and explained our environmental management, and it seems that our attitude toward addressing environmental challenges led by Head Office impressed the judges. From then on, this GP Certification system has been developed to receive inquiries from overseas customers.

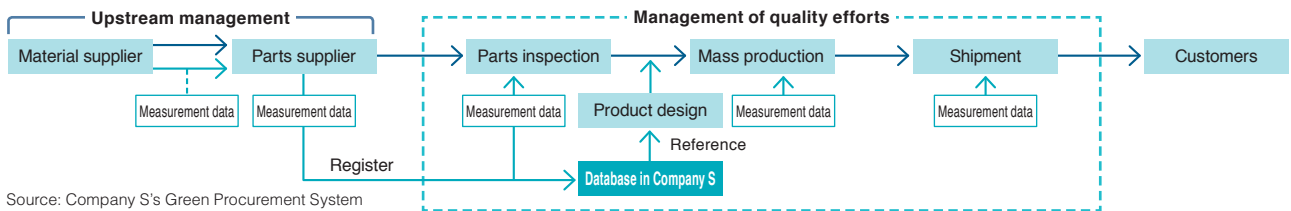
**Moderator** With the Sustainability Report 2006, the "Global







### Illustration Management of Chemical Substances in Products (CMS)



Source: Company S's Green Procurement System explanatory meeting document

Environmental Communication System" was announced. How were these in-house rules established?

**Nakamura** We had issues of bad communication on environmental information between Head Office (business units) and overseas sites, and to solve this, the system was established.

**Aizawa, Manager (hereinafter referred to as Aizawa)**

When Company P conducted an on-site audit of our Chinese manufacturing subsidiary, Suzhou Shin-Etsu Polymer Co., Ltd. (SC) in November 2004, the company was disqualified, judged that its awareness about RoHS substances was low. This was, however, not reported to the Electronic Device Business Unit, and when Company P visited the Kodama Plant in September 2005, we came to learn of this fact for the first time and the negligence of environmental management was critically pointed out to us. Mr. Akazawa, president, was very worried about this and gave instructions to build a mechanism to smoothly communicate information throughout the Group including overseas operations by the Environmental Administrators of business units in a responsible manner.

**Nakamura** That was the Global Environmental Communication System (established in October 2005). This system was originally a mechanism for information communication, but we had an epoch-making event that made this mechanism alive.

**Kojima, Manager (hereinafter referred to as Kojima)** Niigata Polymer Co., Ltd. manufacturing shipping boxes for semiconductor wafer and other products (NP) was GP-certified in November

2005 because Company S decided to ship the boxes to Europe. Every GP-certified plant must submit a Certificate of Non-use of Environmentally Controlled Substances, analysis (ICP) data, and the chemical ingredient list or MSDS at the time of product approval screening. In addition there are also upstream control obligations such as a confirmation form for change management to be submitted when any change regarding production has occurred. Back then, NP was forced to change the material quality of a product supplied in a small quantity because of its raw material supplier, and at that time, it neglected part of its upstream management obligations. For this reason, in April 2006, judges from Company S visited us and conducted a very strict re-audit. To satisfy items pointed out during the audit, NP reorganized its environmental quality assurance system, but Head Office also received many requirements for improvement.

**Nakamura** For the Global Environmental Communication System already established, we added ①selection and appointment of Environmental Administrators, ②Green Procurement Guidelines ③Management Standard of Chemical Substances Contained in Products, etc. and submitted it to Company S as Head Office management rules, which was duly approved by the company. I heard that the rules contributed to restructure the business units' mechanisms after receiving environmental audits from other semiconductor-related customers, and they are used for explanation by our top environmental management during audits of overseas plants by foreign customers.

**Moderator** I heard that at Company S's audit, the company was required to conduct upstream management including that of the prohibited substances in purchase specifications, etc., and NP was approved by explicitly indicating the SS-00259 environmental control substances in the Material Purchase Management Guidelines. Conventionally, our purchase management guidelines didn't have any specifications about such prohibited materials, and I think individual plants had difficulties at the time of customers' environmental audits. Please tell us about your experience.



**Shimazaki** At Shinano Polymer Co., Ltd., we experienced the same issue during a customer's environmental audit and responded to it by specifying the prohibited substances in our own "Material Purchase Management Guidelines." In December 2008, however, at the time of Company N's environmental audit, they asked if the parent company explicitly indicated the prohibited substances in documents to suppliers, so we asked the Head Office (Purchase Center and Legal Group) to revise the rules.

**Nakamura** In May 2008, the Legal Group prepared a revised draft of the "Basic Agreement of Purchase Transaction" including an article requiring non-use of prohibited substances as part of the review of corporate-wide regulations but was left on the shelf in consideration of the reality of purchasing vinyl chloride. For this reason, we decided to complete a "memorandum on environmental protection" with material and parts suppliers for electric and electronic products. The prohibited substances in this memorandum were disclosed as the Shin-Etsu Polymer Group's "Control Standards of Chemical Substances Contained in Products," and we maintain consistency with its contents.

**Aizawa** As the corporate wide set of rules and regulations (in-house database) doesn't include the Global Environmental Communication System that specifies this control standard, environmental staff of overseas plants and sites answer that we have no corporate-wide standard against customers' inquiries with simple-minded honesty. What do you think about this?

**Kawamura** "The Global Environmental Communication System" and "Control Standards of Chemical Substances Contained in Products" are disclosed in our Environmental and Social Report and must be registered in the corporate-wide collection of rules. I will have this reviewed immediately.

**Moderator** What about the current situation of addressing the challenge at the PVC Products Business Unit?

**Ogasawara** The recognition about PVC products in the electric and electronic industries is that they know vinyl chloride is an excellent polymer but stabilizer, plasticizer, and other additives are problems. It is therefore approved to use for applications without alternative materials, and the Tokyo Plant has Company S's GP-certification as a manufacturing plant of vinyl chloride compounds. For vinyl chloride compounds, we use about 1,500 raw materials and have more than 2,500 products. When we newly purchase raw materials, etc., we receive MSDSs for control, based on the Tokyo Plant's Material Purchase Control Guidelines. In the vinyl chloride compound industry, lead-based stabilizer is used in the field of construction materials, leaving a possibility for contamination. For this reason, we conduct inspections of RoHS substances before shipment using a fluorescent X-ray analysis of all items and many electric wires. We regularly hold environmental audits of OEMs (secondary suppliers) but in reality, the main focus is on quality audit, not so much on chemical substances contained in products.

**Kojima** The same applies to the internal environmental audit and environmental audit of secondary suppliers. In fact, though in the

same "environmental" category, the contents of EMS (ISO14001) and CMS (managements system of chemical substances contained in products) are actually different, so I think it is not reasonable to incorporate CMS into ISO audits.

**Arai** At the Kodama Plant, we conduct secondary supplier audits by providing environmental items in ISO audits, so we are not much different from other plants. By the way, the CSR Dialog of CSR Report 2009 says Mr. Nakamura and I are certified as Company R's CMS judges. For this reason, I have been learning about the audits and think it best to conduct audits by using Attachment 1 "Action Item List and Check Sheet" of JGPSSI Guidelines for the Management of Chemical Substances in Products. Many customers use this check sheet.

**Kawamura** I have asked the Electronic Device Business Unit to conduct environmental audits of secondary suppliers in the China sphere. What is the progress of this?

**Aizawa** SC conducted environmental audits of four secondary suppliers in FY2009. Our business unit has six secondary suppliers in, for example, Guangzhou, Dongguan, Tianjin and Xuzhou and between FY2008 and 2009, we gave thorough instructions about quality assurance systems. We believe it is a challenge for FY2010 to firmly establish environmental quality assurance systems of these secondary suppliers.

**Nakamura** In the case of overseas sites, we introduced the environmental quality assurance system of SC and it was covered in the Sustainability Report 2009, but Shin-Etsu Polymer (Malaysia) Sdn. Bhd. issued its own "Environmentally Hazardous Substances Guidelines" (established in October 2004) and conducts CMS audits of secondary suppliers.

**Moderator** Mr. Kawamura, please conclude the meeting.

**Kawamura** I believe Environmental Administrators of business units and plants have done a good job, learning a lot from customers in relation to environmental audits. Please note, however, that it is not desirable to have only the Environmental Administrators be familiar with and operate the management of chemical substances contained in products and for environmental staff at Manufacturing and Engineering to be "unconcerned." So I want you to conduct sufficient education and training of employees. I also heard that the environmental survey database of the Electronic Device Business Unit is effective for information sharing, so please develop the database across divisions. At present, requirements from customers are more advanced such as supply chain information communication of JAMP control substances, survey of candidate substances for REACH approval contained in products and investigation of lifecycle CO<sub>2</sub> emissions, so please take appropriate actions and measures.

**Moderator** We believe, listening to ideas and comments about supply chain green procurement management over the past ten years from Environmental Administrators from concerned divisions has certainly been a precious opportunity for dialog. Thank you very much.

## Green products thriving in the market

We have been developing environment-friendly products. Described below are some of the products available in the market.

### Organic conductive polymer ink SEPLEGYDA®

Rich in potential applications due to its transparency, flexibility, and electrical conductivity



SEPLEGYDA® is organic conductive polymer ink with high transparency as well as such features as antistatic performance (AS series) and low resistance, high conductivity (OC series). Thanks to its high flexibility, this polymer ink can be applied to a variety of base materials ranging from thin films to thick materials. We are now promoting R&D to apply the ink to electrolytes for aluminum electrolytic capacitors, antistatic agents for electronic component packing materials, transparent electrodes for touch-screen on liquid crystal displays, etc.

The SEPLEGYDA® series is developed as a water-based and organic solvent-based one. The water-based ink does not emit VOC's though they need to be dried at high temperatures of 120-150 centigrade, while organic solvent-based one consumes less energy in the manufacturing process since they can be dried at lower temperatures.

With the application as capacitor electrolyte (the CN Series,) when the electrolytic solution is vaporized, the transfer and storage of electric charges are hampered; no such performance degradation occurs with the SEPLEGYDA® series, thanks to its solid electrolyte. This polymer ink can also avoid causing damage to aluminum foils since unlike conventional products it forms films at low temperatures by impregnating polythiophene conductive polymer solution. SEPLEGYDA® is suited to antistatic use as

it is less susceptible to seasonal environmental changes due to its low humidity dependence when compared with surfactant antistatic agents, and is therefore used as an alternate for antimony, an ATO antistatic agent with high toxicity. In relation to its application to transparent electrodes, this polymer ink has been drawing attention as an alternative to indium, a rare metal used in ITO transparent electrodes, raising expectations that production efficiency will be improved by adopting a coating method instead of conventional sputtering methods.

In the future, we will not only promote application development for customers, but also develop original products through in-house cooperation.



### “0402W4P1” carrier tape for 0402 parts

Successfully reduced the amount of raw material use to 1/8 through joint development efforts with customers and Chip Mounter makers



The 0402 parts indicate the parts and components of chips (ceramic capacitors, resistors, etc.) of 0.4mm x 0.2mm in size, and “0402W4P1” is a carrier tape with 4mm width and 1mm pocket pitch to accommodate the parts.

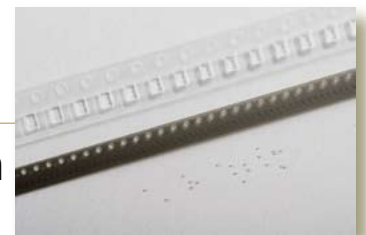
In the electronic device industry, 1005 parts (1.0mm x 0.5mm) has been

the mainstream, but, with the rise of Smartphone and other highly functional terminals, downsizing has been in progress from 0603 to 0402 parts. We started developing the 0402W4P1 carrier tape around 2004 and started mass production in 2008.

The main feature of this carrier tape is the reduced amount of materials per pocket to 1/8 when compared with conventional ones with 8mm in width and 4mm pocket pitch. The Life Cycle Assessment (LCA) has also been elaborately implemented in its molding process.

This product constitutes a new standard jointly developed with our customers including ceramic capacitor manufacturers and chip mounter makers. Though we had difficulties in improving the precision of insertion at taping, we could successfully upgrade the mold die on the micron order. In May 2009, this standard was established as IEC60286-3-2 standard of the International Electro Technical Commission.

Our products have 80% market share and orders have drastically increased. To meet the rapid increase in demand, we shall continue to enhance our productivity.





## C-PET in-flight meal trays

Increasing expectations for **environmental load reduction** taking advantage of such features as low cost, light weight and heat resistance

Shin-Etsu Finetech  
Co., Ltd.  
Division II  
General Manager  
**Atsumi Saito**



With a higher heat resistance compared to Amorphous PET (A-PET), Crystalline PET (C-PET) has been used as pre-cooked meal containers for oven heating on international flights. Our products enjoy 100% share of domestic airlines.

In-flight meal trays have traditionally been made from ceramic or aluminum, but carriers started to introduce lightweight materials with high heat resistance (220 degrees centigrade x 30 minutes) to meet the requirements to reduce the weight of in-cabin items and the introduction of an oven in airplanes, and C-PET has thus

attracted attention.

Polypropylene Filler (PPF) widely used for boxed meals sold at convenience stores cannot be placed in an oven. Molded pulp packaging, which was considered desirable from an environmental aspect, required the inner surface to be film laminated for fluid leakage prevention, resulting in a disadvantage that the laminated layers are torn in deep draw forming. In contrast, C-PET is low-cost and disposable, in addition to being able to be put in an oven.

C-PET further allows draw vacuum forming. In May 2010, we started manufacturing C-PET bowls or round trays to respond to diversified in-flight menus such as set meals, noodles, and rice bowls.

While in A-PET vacuum forming, heated PET sheets (110-120 degrees centigrade) are formed in a cooled mold (40-60 degrees centigrade,) C-PET is



formed by crystallizing the same sheet in a heated mold (170-180 degrees centigrade.) In this forming, we had difficulties in, for example, fitting the container and the lid, but were able to successfully develop products to meet customers' satisfaction. To check the environmental systems of OEM manufacturers, we conduct an annual quality and environmental audit based on the ISO quality manual.

We plan to work together with food manufacturers and other relevant companies for applications other than in-flight meal trays and establish production systems to respond to small and medium-sized lots.

## Separators for fuel cells

Proposing **fuel cell** separators with high hot water resistance **for home use and for electric carts**

R&D Center  
R&D Group  
**Noriyoshi Hosono**

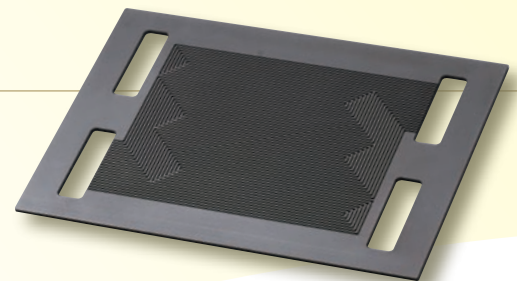


Polymer electrolyte fuel cell (PEFC) uses an ion-conductive polymer electrolyte membrane as an electrolyte. Although its generating efficiency is somewhat lower than that of other types of fuel cells such as phosphoric acid fuel cell and molten carbonate fuel cell, the commercialization of PEFC for home use or electric vehicles is in progress thanks to such characteristics as low operating temperature (80 degrees centigrade),

compactness and light weight.

PEFC is formed by stacking 50 to 100 plates of the single cell (fuel cell stack) to produce high voltage; each single cell is formed by sandwiching an MEA (membrane electrode assembly) that consists of a fuel electrode, a polymer electrolyte membrane, and an air electrode between bipolar separators (bipolar plates) with engraved gas passages.

There are two types of separator: a fuel electrode ( $H_2 \rightarrow 2H^+ + 2e^-$ ) separator with groove passages for hydrogen and an air electrode ( $1/2O_2 + 2H^+ + 2e^- \rightarrow H_2O$ ) separator having groove passages for air and water vapor. A typical fuel cell stack is formed by alternately stacking



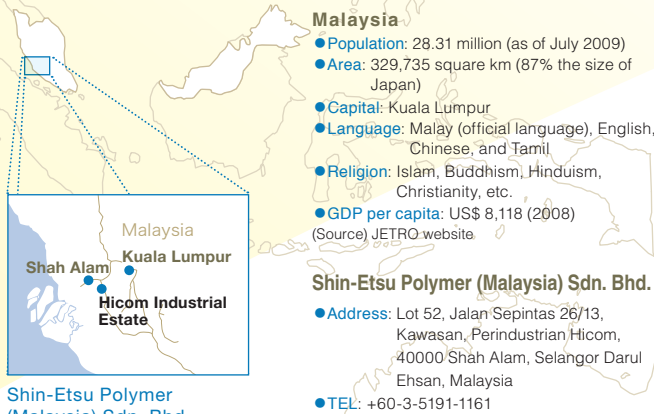
separators and membrane electrode assemblies. Our graphite mold separators have electrical resistance of 20mΩ-cm, containing no ionic impurity (such as  $SiO_4^{2-}$ ,  $Cl^-$ ,  $SO_4^{2-}$  and  $K^+$ ) by using PPS as the base resin material, offering high hot water resistance.

Solar power and fuel cells are expected to become major clean energy sources in home generation of electricity in the future, and Asia including China, South Korea and India are actively adopting fuel cells.

Our company is going to propose separators for fuel cells in order to increase market share.

Shin-Etsu Polymer (Malaysia) Sdn. Bhd.

## Environmental activities developed through interactions of diverse races and cultures



**Shin-Etsu Polymer (Malaysia) Sdn. Bhd. Hicom Industrial Estate, Shah Alam, Selangor**

Hicom Industrial Estate is located 40 km from the capital, Kuala Lumpur and 7 km from Shah Alam city center. Proton, Malaysia's national auto-manufacturer has its factory there. Many Japanese companies, including "S.E.H. (Shah Alam) Sdn. Bhd." (silicon wafers), "Shin-Etsu (Malaysia) Sdn. Bhd." (magnets), and "Shin-Etsu Electronics (Malaysia) Sdn. Bhd." (encapsulation materials) from the Shin-Etsu Group, operate on the industrial estate.



### One of the largest production bases of manufacturing products in five categories

Shin-Etsu Polymer (Malaysia) Sdn. Bhd. ("SM") was established in October 1990 as a wholly owned subsidiary of Shin-Etsu Polymer Co., Ltd. and began operations in August 1990. SM manufactures products in five categories, namely keypads, inter connectors, carrier tapes, rolls for OA devices and silicone rubber molded products. Keypads have maintained the largest share in the product line-up ever since establishment, but rolls for OA devices are expected to overtake them in the second half of 2010 due to the changes in the business environment.

SM has two factory buildings; the first factory manufactures keypads and inter connectors while the second one produces rolls for OA devices, silicone rubber molded products and carrier tapes. The first factory building is two times larger than the second one. SM is one of the largest production bases with a total ground space of 59,293 square meters and a total floor space of 39,294 square meters when combining the two factories.

The number of employees is a little more than 1,400, including 13 resident employees from Japan. In addition, SM has about 340 dispatched employees (such as Vietnamese, Burmese, Indonesians and Cambodians). The superintendents of both factories are Japanese, while local employees and Japanese

employees work as Department Managers. All Department Managers are male, but the male to female ratio of the entire staff is 1 to 4, with the female employees taking leadership in the practical aspects of business.

### Coexistence of various races and cultures

The diversified racial and ethnic composition of employees is the primary feature of SM. Among the Malays, accounting for most of the employees, 66% of them are Malay, 1% is Chinese-Malay, and 6% are Indian-Malay, while others are of overseas origin. Their religions are also various, including Islam, Hindu, Buddhism, and Christianity. Holidays with different backgrounds are also celebrated, such as the Islamic celebration of "Hari Raya" to mark the culmination of Ramadhan, "Deepavali" and "Thaipusam" Hindu festivals, the Chinese New Year "Spring Festival," and Lunar New Year celebrated by the Chinese population.

Even though these holidays are indigenous to individual religious cultures, they are designated as regular holidays of all SM Group companies. Besides, it is a legal obligation in Malaysia to install signs to indicate the direction of the Islamic holy land of "Mecca" and establish a place of worship with waterworks to purify bodies in the office so that the Islamic employees can pray there five times a day.

There is also a significant difference in eating habits between



## Voice — Opinions of local officials —

## Supplier environmental audit conducted by local members

Manager of  
Environmental, Safety  
Health, Security & ISO  
Department  
**SAFRI  
SAMSUDIN**



I studied environmental science at university and joined the company in 2001 after working

for two other companies. I served as a production manager of SR (Silicon Rubber products), and since April 2009, I have been in charge of the Environmental Safety & Health (ESH) Dept. Our targets for this fiscal year includes reduction of general waste by 3% and hazardous waste by 2%.

With the establishment of "EHSM-001 (management of environmentally hazardous substances)" internal standard in October 2004, SM has been pursuing the management of chemical substances contained in products. Since Electric Company A in September 2006

and Component Company F conducted the on-site audits in February 2007, we have undergone on-site or document audits of fifty-eight companies, winning an A grade in all of them. Taking the technical standards set up by major Japanese companies into consideration, we also established "EHSG-002 (guidelines for environmentally hazardous substances)" (revised in November 2009) and conduct environmental audits on material or parts suppliers by local audit members (about 15 persons) only. Going forward, we want to improve competency of the ESH system.

## Proposed and led the initiative to become the first ISO14001-certified overseas group company

Majored in mechanical engineering at a university, I worked for several companies and joined SM in 1998. As I had been in charge of acquisition of the ISO 14001 certification in a Japanese company where I previously worked, I proposed an initiative to acquire ISO certification here, too, and in September 2000, SM became the first overseas subsidiary of the Shin-Etsu Polymer Group to become ISO14001-certified. The environmental policy card (illustrated with green leaves) that was then used in the ISO initiative was adopted on the cover of the brochure for the Green Activities

Training and Exchange Convention in March 2000.

In April 2009, I transferred from the ESH Dept. to the SR Production Dept., where I am now in charge of products such as medical tubes, catheters, and profile extrusions. At the time I joined the company, hundreds of drums of ink waste were left in the waste site. I looked for a legal intermediate treatment company to clear them out. SM has been promoting the 3R (reduce, reuse, recycle) activities, such as the reuse of roll shafts and recycle of waste plastic. I would like to further improve productivity by

Production Manager  
of Silicone Rubber  
Dept.

**AB. HAMID  
AHMAD**



increasing the yield rate and reducing waste and keep fueling motivation.

Malaysia and Japan. As eating pork is prohibited among Muslims and beef among Hindus, we use only fish, chicken, venison, and vegetables in the staff canteen. Furthermore, SM has a "Canteen Committee" to receive complaints about canteen meals from our employees and reflect their opinions not only to improve the quality of meals but also to select suppliers for the canteen.

### Conducting original activities for environmental improvement

The Environmental Safety & Health Dept. is in charge of the management of chemicals contained in products, setting "Environmental Hazardous Substances Guideline," an SM original management policy, as well as conducting environmental auditing of material and component suppliers. We send self check sheet to all business partners beforehand and ask them to perform auditing by filling out the document. Shin-Etsu Polymer Co., Ltd. is also requested to submit the sheet as a supplier. The local staff also conducts on-site auditing of more than a dozen companies by itself.

We report to the Selangor Department of Environment, the amount of wastewater, noise, and other industrial emissions that affect the environment of surrounding areas of the plant, making efforts to achieve a lower level than that of the previous year. SM is proud that our wastewater is so clean that we can see small fish swimming in drainage channels of the plant (Refer to P13).

In 2009, we launched a "No Smoking Campaign" following a

### Basic Management Visions of SM

#### RC'S with Thanks!

- 1 With pride and awareness of being the largest plant in the Shin-Etsu Polymer Group and a challenging spirit, we aim to be a mother plant that completely captures the market and customer needs.
- 2 Ensuring close communication, reporting and consultation within the company as well as keeping a sense of gratitude in mind, we work hard to be an innovative, technology-driven manufacturer with great energy to achieve customer satisfaction.
- 3 Combining the capacities within the Shin-Etsu Polymer Group, we strive to establish a strong presence in both the global society and the local community, under our motto of "Think Global and Act Local."

#### RC'S stands for:

<b>Report</b>	(frankly and honestly)
<b>Challenge</b>	(aggressively developing new markets and innovative technology)
<b>Communication</b>	(touching the hearts of others)
<b>Consultation</b>	(with a spirit of cooperation and straight opinions)
<b>Contribution</b>	(to the local community)
<b>CS</b>	(to be given top priority)

proposal by Managing Director, Mr. Noma. By holding seminars about the impact of smoking on health and changing smoking section arrangements, we have been successful in reducing the number of smokers by 30, which were initially 900 at the Plant No.1.

In Malaysia, where diverse races and religions co-exist and a variety of cultures are mixed, we need to invent contrivances that are different from those in Japan. While respecting the unique perspectives and activities cultivated in this environment, we are determined to play a substantial role as the largest production site in the Shin-Etsu Polymer Group.



# Green Activities Overview

Our company has been promoting Green Activities on a Group-wide basis since fiscal 2000.

Since fiscal 2003, we have set up and addressed three-year mid-term targets and we shall do our best to achieve the 3rd Mid-term Targets in place from fiscal 2009.

## Basic Policy

We recognize the Green Activities as those of productivity improvement from the viewpoint of the environment and have been promoting them as deeply rooted corporate activities.

## The 3rd Mid-term Targets of the Green Activities

(fiscal 2009 to fiscal 2011)

Based on the results and a review of the 2nd Mid-term Targets (fiscal 2006 to fiscal 2008) we set up the 3rd Mid-term Targets toward fiscal 2011 to promote environmental conservation activities.

### 1. Mid-term Targets for Energy-saving

- ① We will achieve a 35% reduction of produced CO<sub>2</sub> emission units (against that of the reference year 1994) by fiscal 2011.
- ② Each plant will reduce its energy consumption when compared with actual units of fiscal 2008 by 3%.

### 2. Mid-term Targets for Waste Reduction and Recycling

- ① We will maintain a zero emission rate (less than 1% emission rate).
- ② We will reduce basic waste disposal units against that of results in fiscal 2008 by 3%.

※Emission rate = (amount of land fill + simple incineration)/total amount of waste x 100 (%)

### 3. Mid-term Targets for Office Sections

We will reduce energy consumption and CO<sub>2</sub> emissions when compared with actual results of fiscal 2008 by 10%.

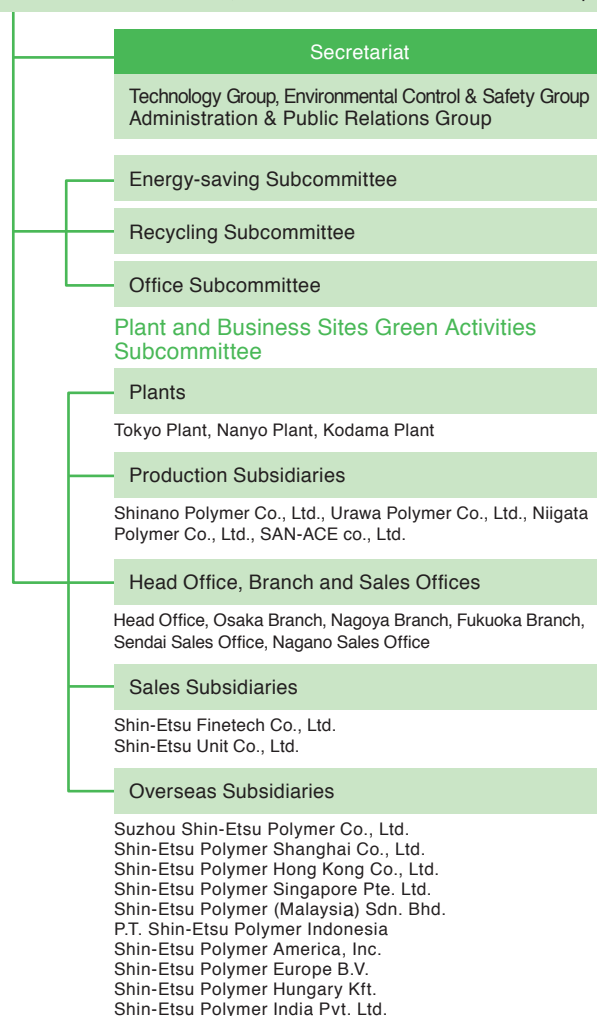
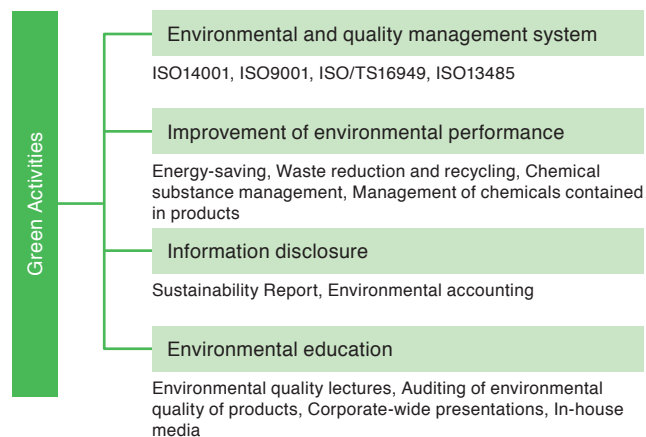
## Summary of FY2009 Activities and Results

### ● Energy-saving Activities

In order to respond to the global recession since the second half of FY2008, we have worked to secure profits by lowering the break-even point rate at individual production sites. In other words, while working against the lowering of production quantities, we have reduced fixed costs. The energy consumption amount (and CO<sub>2</sub> emissions) was thus reduced by about 8% when compared with that of FY2008, but due to the delayed economic recovery and other reasons, the amount of production as the denominator was further reduced, the basic unit of energy (and basic unit of CO<sub>2</sub> emissions) increased as much as 21 to 22%.

### ● Waste Reduction/ Recycling Activities

When compared with the total amount of waste discharged in FY2008, FY2009 was reduced by as much as about 25%. But, for the reason mentioned above, the basic unit of waste with the production amount as the denominator was reduced by only 0.5%. On the other hand, the emission rate in FY2009 was 0.6% and satisfied our target of "less than 1% emission rate."



# Activities associated with biodiversity

The Shin-Etsu Polymer Group is actively engaged in initiatives against contamination from the effects of business activities upon biodiversity such as ①proper treatment of industrial waste water, ②non-use of hazardous substances contained in products and ③reduction of VOC (volatile organic compounds) exhausts.

## Revision of Basic Environmental Policy

In April 2010, we revised the Basic Environmental Policy and added a new item: "By grasping and assessing the impact of business activities upon the eco-system and reducing its influence, we make efforts to maintain biodiversity and sustainable utilization" to strengthen our initiatives to protect biodiversity.

## Tree planting volunteers at headwater of industrial water

Yamaguchi Prefecture hosts a forest maintenance exchange program (project to create forests to protect water, "Exchanges of Towns, Water and Forests") twice a year. In this program, we cut down undergrowth in broad-leaved forests and conduct cleaning cutting in the forests owned by Shunan City in the Nishikigawa river system. Nanyo Plant, leading industrial water into the site participates in the program every year. Employees and family members of the Engineering Department took part on November 7, 2009.



Maintenance of broad-leaved forests

## Regular water quality inspection of industrial wastewater

In order to protect aquatic organisms in neighboring rivers and oceans, our group properly treats industrial wastewater. At the Nanyo Plant, industrial water used in the production process of vinyl chloride pipes is exhausted into Tokuyama Bay after separating the oil, and we conduct a water quality inspection of the final process twice a year.



Taking water for quality inspection

	Unit	Reference value	2005.03	2006.03	2007.03	2008.03	2009.03	2010.03
pH	—	5~9	7.6	7.4	7.5	7.5	7.5	7.4
COD	mg/ℓ	160 or less	1.5	2.8	1.8	3.3	2.5	3.3
Amount of suspended solids	mg/ℓ	120 or less	2	10	2	7	3	22
Pb density	mg/ℓ	0.1 or less	N.D.	0.007	0.005	0.019	0.031	0.085
Zn density	mg/ℓ	2.0 or less	0.006	0.024	0.034	0.061	0.015	0.034

## Site use status of production plants

The table below shows the site use status of the domestic production plants of our group.

(Unit: m<sup>2</sup>)

		Tokyo Plant	Nanyo Plant	Kodama Plant	Shinano Polymer Co., Ltd.			Urawa Polymer Co., Ltd.	Niigata Polymer Co., Ltd.	Total
					Shiojiri Plant	Nagano Plant	Miyabuchi Plant			
Sites, etc.	Site area	76,059	34,500	21,171	16,200	4,511	1,432	4,512	59,128	217,512
	Building area	33,021	8,227	8,287	5,230	918	521	2,676	15,144	74,024
	Floor area	44,412	10,602	18,401	10,050	1,504	969	3,740	25,087	114,765
Pavement, etc.	Paved area	40,474	22,636	7,574	3,610	1,160	911	1,771	7,666	85,802
	Water surface area	74	139	0	0	0	0	0	0	213
	Green area	2,490	3,498	5,309	2,360	100	0	51	14,912	28,720

## Actual VOC emissions into the atmosphere in FY2009

Our group reports the handling amount of 20 substances subject to emission reduction \*1 (t/year) and the volume of emissions into the atmosphere (t/year) to four electric and electronic industry organizations.

	Plants subject to investigation (※2)	Tokyo Plant	Kodama Plant	Shinano Polymer Co., Ltd.	Niigata Polymer Co., Ltd.	Total
Facility type	1.Painting	2.6	0.0	6.7	0.0	9.3
	2.Glueing	0.0	0.0	0.0	0.0	0.0
	3.Printing	0.1	0.0	0.0	0.0	0.1
	4.Chemical product manufacturing	0.0	0.0	0.0	0.0	0.0
	5.Industrial cleaning	0.0	0.0	6.0	0.0	6.0
	6.VOC storage	0.0	0.0	0.0	0.0	0.0
	6 Other than facility types	0.2	13.0	0.0	1.6	14.8
	Total	2.9	13.0	12.7	1.6	30.2

※1: Toluene, Xylene, MEK, IPA, ethanol, butyl acetate, ethyl benzene, MIBK, etc.

※2: Plant with an annual handling amount of each substance in the 20 substances subject to investigation  $\geq 1$ t/year



A pond with carps and greenery (Tokyo Plant)



Small fishes swimming in the ditch Shin-Etsu Polymer (Malaysia) Sdn. Bhd.

# Environmental and Quality Management System

All domestic and overseas production sites of the Shin-Etsu Polymer Group have been awarded with the ISO9001 and the ISO14001 certification, apart from the recently established Shin-Etsu Polymer India Pvt. Ltd.

In order to further enhance customer satisfaction, two divisions (Electronic Device Business Unit and FI Division) were certified on a divisional basis.

## Environment Management System

To promote ISO14001 across the organization, each general manager appoints an environmental management representative based on corporate-wide environmental policies, and heads of departments serve as departmental environmental conservation representatives to promote environmental management. Environmental management implementation plans of individual departments are prepared on the basis of the environmental objectives and targets of all the sites set forth at the beginning of each fiscal year and approved after a review by the plant manager. The general manager reviews the progress and extent of accomplishment of the implementation plan through submissions of interim and final reports. Furthermore, an annual inspection by the Environmental Conservation Committee is held for an improvement and enhancement of environmental conservation.

## Quality Management System

To promote ISO9001 across the organization, each general manager in the role of an executive manager sets forth quality policies and appoints a quality representative to establish and maintain the total quality management system. Each department builds and operates an operational system and by implementing PDCA cycles, improves the effectiveness of the system, quality

of products and efficiency of operations. Each general manager reviews the progress of improvement through monthly reports, achievement review sessions and management reviews and provides the necessary instructions.

## ISO/TS16949 Automobile Sector Quality System Standards

ISO/TS16949 is a standard comprising ISO9001 requirements and additional technical specifications (TS) unique to the automobile industry, and it is imperative for manufacturers of automobile parts and components to obtain this certification.

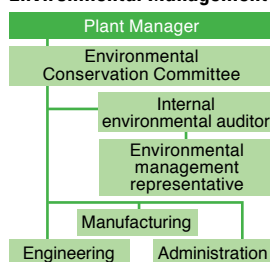
## ISO13485 Medical Device Quality Management System

ISO13485 omits some ISO9001 requirements, and adds requirements unique to medical devices for the remaining ISO9001 requirements.

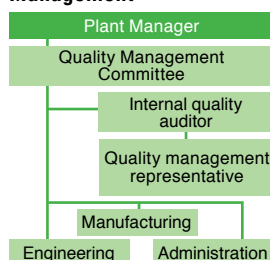
## ISO/IEC17025

The standard is based on ISO9001 and added with requirements specific to laboratories and calibration organizations. We can attach certification marks to the certificates issued by such laboratories and organizations and increase reliability as globally recognized certificates.

### Organization of Environmental Management



### Organization of Quality Management



### List of ISO14001 Certification

	Plants & Subsidiaries	Approval Date	Registration Number	Expiry Date	Authority	Applied Specification
Domestic Plants & Subsidiaries	Tokyo Plant	2001.07.23 2010.07.23	JCQA-E-0270	2013.07.22	Japan Chemical Quality Assurance Ltd.	ISO14001:2004
	Nanyo Plant	2001.02.26 2010.02.26	JCQA-E-0232	2013.02.25	Japan Chemical Quality Assurance Ltd.	ISO14001:2004
	Kodama Plant	1999.01.11 2008.01.11	JCQA-E-0040	2011.01.10	Japan Chemical Quality Assurance Ltd.	ISO14001:2004
	Shinano Polymer Co., Ltd.	1999.04.05 2008.04.05	JCQA-E-0056	2011.04.04	Japan Chemical Quality Assurance Ltd.	ISO14001:2004
	Urawa Polymer Co., Ltd.	2001.04.23 2010.04.23	JCQA-E-0252	2013.04.22	Japan Chemical Quality Assurance Ltd.	ISO14001:2004
	Niigata Polymer Co., Ltd.	2001.11.26 2010.06.18	EMS 562957	2010.11.25	BSI Group Japan K.K.	ISO14001:2004
	Shin-Etsu Finetech Co., Ltd.	2005.08.01 2008.08.01	JCQA-E-0679	2011.07.31	Japan Chemical Quality Assurance Ltd.	ISO14001:2004
	Overseas Plants & Subsidiaries	Suzhou Shin-Etsu Polymer Co., Ltd.	2001.11.16 2009.09.18	E3020	2012.09.18	Shanghai NQA Certification Co.,Ltd.
Shin-Etsu Polymer (Malaysia) Sdn.Bhd.		2000.09.27 2010.04.12	E209041	2013.01.29	Bureau Veritas Certification Malaysia	ISO14001:2004
P.T.Shin-Etsu Polymer Indonesia		2002.01.12 2008.01.12	GB02/54090	2011.01.12	SGS United Kingdom Ltd. Systems & Services Certification	ISO14001:2004
Shin-Etsu Polymer Hungary Kft.		2006.11.29 2009.11.29	205859	2012.11.28	Bureau Veritas Certification Hungary	ISO14001:2004



## List of ISO9001 Certification

Plants & Subsidiaries	Approval Date	Registration Number	Expiry Date	Authority	Range of Products and Services	Applied Specification
Tokyo Plant	1998.01.12 2010.01.12	JCQA-0295	2013.01.11	Japan Chemical Quality Assurance Ltd.	Development and manufacture of laminated sheet products, calendar sheet products and wrapping film; manufacture of synthetic resin corrugated plates; manufacture and outsourcing management of synthetic resin compounds	ISO9001:2008
Nanyo Plant	2000.03.13 2009.03.13	JCQA-0662	2012.03.12	Japan Chemical Quality Assurance Ltd.	Development, manufacture and order receipt of hard vinyl chloride and related products; manufacture of hard vinyl chloride corrugated plates	ISO9001:2008
Kodama Plant	1997.03.03 2009.03.03	JCQA-0193	2012.03.02	Japan Chemical Quality Assurance Ltd.	Development and manufacture of silicon rubber roll products, blade products for OA equipment and silicon rubber products for medical, science and chemical industries	ISO9001:2008
Shinano Polymer Co., Ltd. Shiojiri Plant Electronic Device Business Unit (Quality Assurance Department, Sales Unit) Electronic Device Business Unit (Osaka Branch, Nagoya Branch) Shin-Etsu Polymer Europe B.V. Shin-Etsu Polymer Shanghai Co., Ltd.	1996.12.25 2008.04.15	421497	2010.11.14	Bureau Veritas Japan Co., Ltd.	Development, design and manufacture of inter connectors and rubber contacts	ISO9001:2000
Shinano Polymer Co., Ltd. Nagano Plant, Miyabuchi Plant	1998.07.06 2010.06.01	1614493	2013.07.05	Bureau Veritas Japan Co., Ltd.	Manufacture of silicon rubber products for medical, scientific and chemical industries	ISO9001:2008
Urawa Polymer Co., Ltd. Kurihashi Plant, Omiya Plant	1997.03.03 2009.03.03	JCQA-0196	2012.03.02	Japan Chemical Quality Assurance Ltd.	1. Development and manufacturing of carrier tapes 2. Development and outsourcing management of cover tapes	ISO9001:2008
High Technology Products Business Unit FI Division Niigata Polymer Co., Ltd.	1997.03.03 2010.06.18	FM 562956	2012.03.02	BSI Group Japan K.K.	Development, manufacture, marketing and sales of injection molded wafer cases as well as parts and components for electronic equipment	ISO9001:2008
Shin-Etsu Finetech Co., Ltd.	2002.07.29 2008.07.29	JCQA-1131	2011.07.28	Japan Chemical Quality Assurance Ltd.	Design, development, management of contract manufacturing, supply and sales of manufactured goods of various synthetic resins and rubber (polystyrene, vinyl chloride, silicon rubber, etc.)	ISO9001:2008
Suzhou Shin-Etsu Polymer Co., Ltd.	1997.12.31 2009.09.18	33102	2012.09.18	Shanghai NQA Certification Co.,Ltd.	Manufacture of silicon rubber products (including contacts, plastic keys, connectors and OA equipment)	ISO9001:2008
Shin-Etsu Polymer (Malaysia) Sdn. Bhd.	1996.10.16 2009.05.07	208295	2012.05.07	Bureau Veritas Certification Malaysia	1. Manufacture of plastic key-related products including silicon rubber contacts (silicon elastomer switches) and silicon elastomer connectors for electric and electronic equipment 2. Manufacture and development of embossed carrier tapes for electric and electronic parts and components 3. Development and manufacture of silicon elastomer rolls for automation equipment 4. Manufacture of silicon rubber products for medical, electric and electronic industries and for seal packing materials	ISO9001:2008
P.T.Shin-Etsu Polymer Indonesia	2001.01.03 2010.01.03	ID04/0381	2013.01.03	SGS United Kingdom Ltd. Systems & Services Certification	Manufacture of injection molded wafer cases	ISO9001:2008
Shin-Etsu Polymer Hungary Kft.	2005.11.16 2009.11.29	205859	2012.11.28	Bureau Veritas Certification Hungary	Manufacturing of keypads for electronic devices and associated operations	ISO9001:2008
Shin-Etsu Polymer India Pvt. Ltd.	2009.07.04 2010.07.13	IND97257/R1	2012.07.03	Bureau Veritas Certification (India) Pvt. Ltd.	Manufacture and supply of plastic and rubber components	ISO9001:2008

## List of ISO/TS16949 Certification

Plants & Subsidiaries	Approval Date	Registration Number	Expiry Date	Authority	Range of Products and Services	Applied Specification
Shinano Polymer Co., Ltd. Shiojiri Plant	2008.04.15	(IATF)66569,66572 (BVC)222544/1./2	2011.04.14	Bureau Veritas Certification	Development, design and manufacture of inter connectors and rubber contacts	ISO/TS16949:2002
Suzhou Shin-Etsu Polymer Co., Ltd.	2005.09.10 2009.09.26	(IATF) 0089143 (NQA) T2358	2012.09.25	Shanghai NQA Certification Co., Ltd.	Manufacture of silicon rubber keys and gum connectors for automobiles	ISO/TS16949:2002
Shin-Etsu Polymer (Malaysia) Sdn. Bhd.	2008.08.16	(IATF)71109 (BVC)MYS-233097	2011.08.15	Bureau Veritas Certification	Manufacture of rubber contacts	ISO/TS16949-Second edition
Shin-Etsu Polymer Hungary Kft.	2008.10.27	(IATF) 73668 (BVC)HUN-233257	2011.10.26	Bureau Veritas Certification	Manufacture of silicone rubber components	ISO/TS16949-Second edition

Note: In March 2010, Shin-Etsu Polymer México, S.A. de C.V. was liquidated. In August 2010, the production function of the Hotaka Plant of Shinano Polymer Co., Ltd. was transferred to the Shiojiri Plant.

## List of ISO13485 Certification

Plants & Subsidiaries	Approval Date	Registration Number	Expiry Date	Authority	Range of Products and Services	Applied Specification
Shinano Polymer Co., Ltd. (Nagano Plant and Miyabuchi Plant)	2007.08.22 2010.06.10	DNKFRC92693A	2013.06.09	Bureau Veritas Certification	Manufacturing of silicon rubber products for medical equipment	DS/EN ISO13485:2003
Shin-Etsu Polymer (Malaysia) Sdn. Bhd.	2007.04.17 2010.04.23	BVC201001	2013.04.17	Bureau Veritas Certification Malaysia	Manufacturing of silicon rubber products for medical use	ISO13485:2003

## List of ISO/IEC17025 Certification

Plants & Subsidiaries	Approval Date	Registration Number	Expiry Date	Authority	Range of Products and Services	Applied Specification
Shin-Etsu Polymer Co., Ltd. (Chemical Analysis Center)	2001.04.11 2009.04.11	RTL00870	2013.04.10	The Japan Accreditation Board for Conformity Assessment	Chemical tests Infrared spectroscopy of paint resin Qualitative (JISK0117, JISK5551 2002 Appendix 1)	JIS Q17025:2005 (ISO/IEC17025:2005)

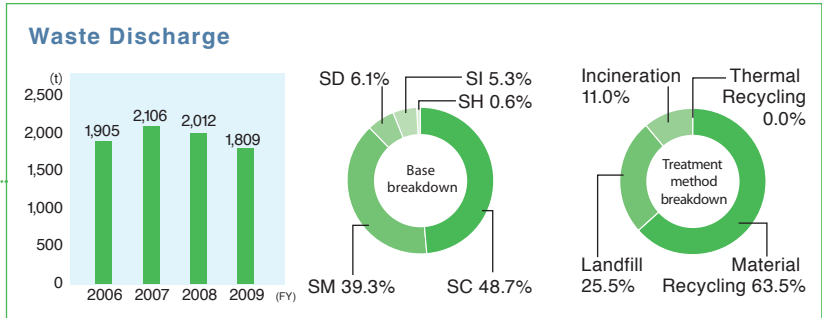
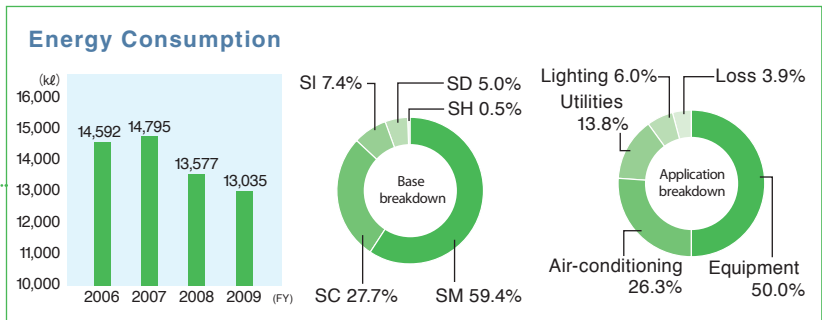
# Environmental Efforts of Overseas Production Plants & Domestic Offices

Energy consumption at our five overseas production plants was equivalent to 96.2% of that of domestic production plants, while waste discharge was 67.2% compared to domestic production plants. In addition, domestic office energy consumption was 0.86%.

## Environmental Data of Overseas Production Plants (fiscal 2009)

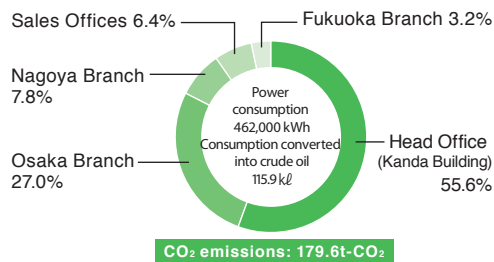
SC: Suzhou Shin-Etsu Polymer Co., Ltd.  
 SM: Shin-Etsu Polymer (Malaysia) Sdn. Bhd.  
 SI: P.T. Shin-Etsu Polymer Indonesia  
 SH: Shin-Etsu Polymer Hungary Kft.  
 SD: P.T. Shin-Etsu Polymer India Pvt. Ltd.

Energy Consumption	<b>13,035kℓ</b>
Specific energy consumption in production	<b>84.2 liters / thousand dollars</b>
CO <sub>2</sub> emissions	<b>29,133 tons of CO<sub>2</sub></b>
Specific CO <sub>2</sub> emissions in production	<b>188.2kg / thousand dollars</b>
Waste Discharge	<b>1,809 tons</b>
Specific waste discharge in production	<b>11.7kg / thousand dollars</b>

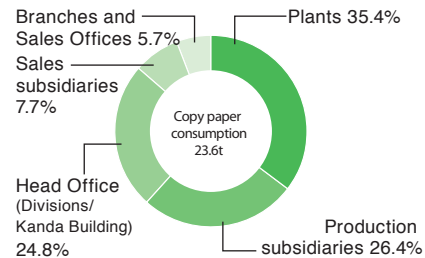


## Environmental Data of Domestic Offices (fiscal 2009)

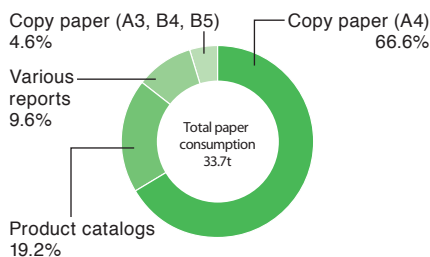
### Energy (power) consumption



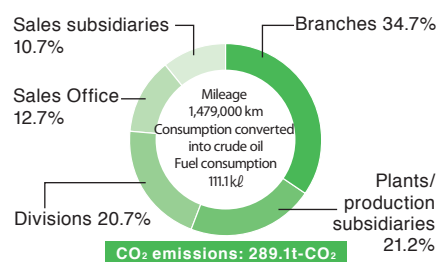
### Copy paper consumption (plants + offices)



### Total paper consumption (plants + offices)



### Official vehicle mileage in fiscal 2009



1) Data of offices located in plants are included in data of plants. 2) Data of domestic sales subsidiaries are included in data of domestic offices.

# Engagement with Customers

In order to meet the requirements for the management of chemicals contained in products by customers, we created the “Global Environmental Communication System” to centrally manage all Group companies including overseas plants. We also apply this system to CSR procurement surveys by customers.

## Global Environmental Communication System

(1) The “Environmental Management Representative” of our Group is appointed, and the Representative represents our Group with regard to customer’s requirements in relation to the environmental quality of our products.

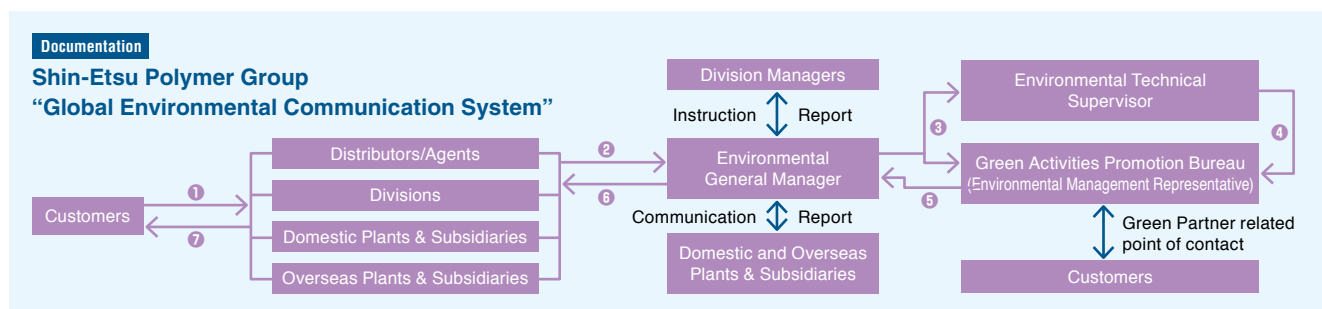
(2) The “Environmental General Manager” and the “Environmental Technical Supervisor” are appointed at each division, and respectively manage issues associated with the environmental quality of products of the division.

(3) Submissions of such documents as Green Procurement Survey Responses, Certificate of non-use of environment-related substances, Conformation Form of the Changes in Management or

Analysis Data are conducted in accordance with the rules set forth in the Global Environmental Communication System.

(4) Material with low environmental burdens (raw material, parts/components, packing material, etc.) are purchased from environment-friendly suppliers in accordance with “Green Procurement Guidelines” and “Control Standards of Chemical Substances Contained in Products.”

(5) Part of this system is applied to customer’s “CSR Procurement Survey (Supplier CSR Promotion Status Survey)” on human rights/ labor, safety and welfare, environment, fair trade and ethics, quality and safety, information security and social contribution.



### List of Plants & Subsidiaries approved by the Sony Green Partner Environmental Quality Approval Program

Partner Name	Corporate ID	Plant Name	Plant ID	Original Date of Plant ID Issuance	Current Validity Period
Shin-Etsu Polymer Co., Ltd.	410A	Tokyo Plant	7742	2005.06.30	2009.09.01~2011.08.31
		Kodama Plant	2586	2003.08.01	
		Shinano Polymer Co., Ltd. (Shiojiri Plant)	2584	2003.08.01	
		Urawa Polymer Co., Ltd. (Kurihashi Plant)	2585	2003.08.01	
		Niigata Polymer Co., Ltd.	7726	2005.11.17	
Shin-Etsu Finetech Co., Ltd.	-		6553	2007.09.21	2010.06.01~2012.05.31

### List of the recommended suppliers by the Sony Green Partner Environmental Quality Approval Program (recommended suppliers)

Partner Name	Corporate ID	Subject material
Shin-Etsu Chemical Co., Ltd.	0185	Molding resin
Shin-Etsu Polymer Co., Ltd.	0186	Molding resin

### List of on-site audits of environmental quality assurance system by customers (FY2009)

Date	Customer Name	Plant Name
2010.03.04	Canon Electronics Inc.	Kodama Plant

Remarks: No quality assurance system audit included.

### List of Certified Judges of the Ricoh Chemical Substance Management System (CMS)

Division/Plant	Name	Registration Number	Date of Certification
Kodama Plant	Yukio Arai	S00132	2006.10.01
Technology Group	Akio Nakamura	S00133	2006.10.01
Technology Group	Hideki Tabei	S01420	2010.03.29

### List of on-site audits of information security system by customers (FY2009)

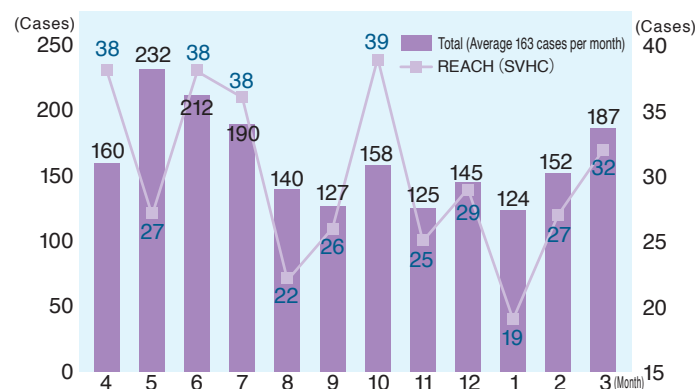
Date	Customer Name	Subject Division, etc
2009.09.28	Panasonic Corporation AVC Networks Company	Information Systems Group Electronic Device Business Unit
2009.11.27	Panasonic Mobile Communications Co., Ltd.	Information Systems Group Electronic Device Business Unit



Annual transition of green procurement surveys



Monthly transition (fiscal 2009)



Documentation

Shin-Etsu Polymer Group “Control Standards of Chemical Substances Contained in Products”

- We set the permissible density (threshold level) of Cd, Pb, Hg, Hexavalent Cr, PBB and PBDE as shown in Table 1. Our control value is based on the strictest values set forth by domestic customers in the electric/electronic industry.
- We guarantee that there are no intentional use of any “Level A chemical substances” in products supplied to customers and that their percentage content as impurities is less than the threshold level shown in Table 2. We also guarantee that the percentage content of any “Level B chemical substances” in products is less than the threshold value shown in Table 3. However, products for customers in the field of construction materials are not covered by this guarantee. The above categories correspond to the Declarable Substance Criteria 1-R (Regulated), 2-A (For Assessment Only), and 3-I (For Information Only) of Annex A “JIG Declarable Substance List” to JIG-101 Version 3.0 (March 31, 2010).

Table 1 Control values of RoHS hazardous materials

Substance	Permissible density		At our Chemical Analysis Center, analysis method (quantitative lower limit)
	Thresholds of RoHS Directive	Our control values	
Cd	100ppm	5ppm	ICP-OES (5ppm)
Pb	1,000ppm	100ppm	ICP-OES (10ppm)
Hg	1,000ppm	100ppm	ICP-OES (5ppm)
Beryllium oxide	1,000ppm	100ppm	Colorimeter method (10ppm) or ICP-OES (5ppm at all Cr)
PBB	1,000ppm	100ppm	XRF (30ppm) or GC-MS (30ppm)
PBDE	1,000ppm	100ppm	

ICP-OES: Inductively Coupled Plasma Optical Emission Spectrometry  
 XRF: X-ray Fluorescence Spectrometry  
 GC-MS: Gas Chromatography-Mass Spectrometry

Table 3: Level B chemical substances (Standard 3-I)

Chemical substances/category	Standard	Threshold level
Beryllium oxide (BeO)	I	1,000 ppm of the product
Bromated flame retardants (other than PBBs, PBDEs, or HBCDD)	I	1,000 ppm of plastic material

Table 2: Level A chemical substances (Standard 1-R)

Chemical substances/category	Standard	Threshold level
Asbestos	R	Intentionally added
Azocolourants and azodyes which form certain aromatic amines	R	30 ppm of the product
Cadmium/cadmium compounds	R	100 ppm of homogeneous materials
Chromium VI compounds	R	1,000 ppm of homogeneous materials
Cobalt dichloride	R	1,000 ppm of the product
Diarsenic pentoxide	R	1,000 ppm of the product
Diarsenic trioxide	R	1,000 ppm of the product
Dibutyltin (DBT) compounds	R	1,000 ppm of tin in a material
Diocetyl tin (DOT) compounds	R	1,000 ppm of tin in a material
Dimethyl fumarate	R	0.1 ppm in a material
Fluorinated greenhouse gases (PFC, SF <sub>6</sub> , HFC)	R	Intentionally added
Formaldehyde	R	Intentionally added
Hexabromocyclododecane (HBCDD) and all major diastereoisomers	R	1,000 ppm of the product
Lead/lead compounds	R	1,000ppm of homogeneous material or has threshold level specified for each laws and regulations
Lead chromate	R	1,000 ppm of the product
Lead chromate molybdate sulphate red (C.I. Pigment Red 104)	R	1,000 ppm of the product
Lead sulfochromate yellow (C.I. Pigment Yellow 34)	R	1,000 ppm of the product
Mercury/mercury compounds	R	Intentionally added or 1,000 ppm of homogeneous material
Nickel	R	Intentionally added where prolonged skin contact is expected
Ozone depleting substances	R	Intentionally added
Perchlorates	R	0.006 ppm of the product
Perfluorooctane sulfonate (PFOS)	R	Intentionally added
Phenol,2-(2H-benzotriazol-2-yl)-4,6-bis(1,1-dimethylethyl)	R	Intentionally added
Di(2-ethylhexyl) phthalate (DEHP)	R	1,000 ppm of the product
Dibutyl phthalate (DBP)	R	1,000 ppm of the product
Butyl benzyl phthalate (BBP)	R	1,000 ppm of the product
Diisobutyl phthalate (DIBP)	R	1,000 ppm of the product
Selected Phthalates Group 1 (BBP, DBP, DEHP)	R	1,000 ppm of plasticized material
Selected Phthalates Group 2 (DIDP, DINP, DNOP)	R	1,000 ppm of plasticized material
Polybrominated biphenyls (PBBs)	R	1,000 ppm of homogeneous materials
Polybrominated diphenylethers (PBDEs)	R	1,000 ppm of homogeneous materials
Polychlorinated biphenyls (PCBs) and specific substitutes	R	Intentionally added
Polychlorinated terphenyls (PCTs)	R	Intentionally added
Polychlorinated naphthalenes (more than 3 chlorine atoms)	R	Intentionally added
Radioactive substances	R	Intentionally added
Refractory Ceramic Fibres, Aluminosilicate	R	1,000 ppm of the product
Refractory Ceramic Fibres, Zirconia Aluminosilicate	R	1,000 ppm of the product
Shortchain chlorinated Paraffins (C10-C13)	R	1,000 ppm of the product
Tri-substituted organostannic compounds	R	1,000 ppm of tin in a material
Tributyl tin Oxide (TBTO)	R	Intentionally added or 1,000 ppm of the product
Tris (2-chloroethyl) phosphate (TCEP)	R	1,000 ppm of the product

\*For a detailed list of chemical substance by category, please refer to Annex B of JIG-101 Ed. 3.0.

# Engagement with Employees

The Shin-Etsu Polymer Group believes that when individual employees firmly recognize their roles and responsibilities and take independent action in different fields, the power of the whole group will be strengthened, leading to its presence as an organization full of vitality.

## Respect for human rights

Based on respect for basic human rights, we eliminate unreasonable discrimination based on human rights, gender, academic backgrounds, health, birthplaces, philosophies, etc. In FY2010, we started human right awareness education for all employees and host activities to advocate basic human rights regarding the understanding of social integration and prevention of sexual or power harassment.

### ●Employee Assistance Program (EAP)

We introduced the Employee Assistance Program in January 2007. This is a system to support employees so that they and their families can lead a healthy life both physically and mentally. While maintaining privacy using toll-free dials and e-mail, professionals of individual fields offer consultation on such fields as mental health, health, childcare, nursing, the law, and financing. We also have a point of contact for sexual harassment consultation.

## Current status of employment

### ●Reemployment System

Based on the Law concerning Stabilization of Employment of Older Persons (revised in 2004), we introduced a reemployment system after mandatory retirement in April 2006. Whether reemployment is applied is determined by the selection standard provided in the contract between employer and union, and each agreement is concluded on a one-year basis, emphasizing health conditions and willingness to work. The limit of contract extension is the legal obliged age.

### ●Employment information (independent data of Shin-Etsu Polymer Co., Ltd.)

#### Employee composition by generation (End of FY2009) (Unit: person)

Teens-twenties	Thirties	Forties	Fifties	Sixties or more	Total
53	163	260	135	19	630

#### Status of employment of new graduates (Unit: person)

Year	University graduates (male)	University graduates (female)	Junior college/vocational school graduates (male/female)	High school graduates, etc.
2009	3	2	0	1
2010	0	0	0	0

#### Status of employment of mid-career workers (Unit: person)

Year	University graduates (male)	University graduates (female)	Other than university graduates (male)	Other than university graduates (female)
2009	4	0	3	0
2010	1	1	0	3

#### Number of employees, average age, and years of employment

Year	Number of employees (persons)	Average age (years old)	Average years of employment (years)
2003	639	40.8	17.5
2004	640	42.1	18.4
2005	625	42.8	18.7
2006	635	43.0	18.8
2007	640	43.0	18.8
2008	631	43.3	18.7
2009	630	43.7	19.2

#### Number of officers and managers

(Unit: person)

	Male	Female
Managers	279	3
Officers	13	0

#### Status of employment of impaired persons

	End of FY2007	End of FY2008	End of FY2009
Number of impaired persons (persons)	13	13	12
Employment rate of impaired persons (%)	1.71	1.75	1.65

## Respect for work life balance

### ●Childcare and nursing leave system

Based on the Act on Advancement of Measures to Support Raising Next-Generation Children enforced in April 2005, we introduced a system to meet short-hour workdays and other individuals' needs to improve work life balance after returning to work.

In relation to the childcare leave system, a total of 13 persons have made use of it. Going forward, we will address the challenge of introducing a system to enable all employees to fully exert their abilities and skills by creating an easy-to-work environment where they can successfully balance work and family.

### ●Work life balance information (independent data of Shin-Etsu Polymer Co., Ltd.)

#### Use of yearly paid holidays

	FY2007	FY2008	FY2009
Average days of holidays given (days)	18.2	18.1	19.0
Average days of holidays taken (days)	7.9	7.3	7.3
Rate of paid holidays being taken (%)	43.4	40.0	38.4

### Use of maternity, childcare, and nursing leave

	FY2007	FY2008	FY2009
Number of persons who have taken maternity leave (persons)	2	3	6
Number of persons who have taken childcare leave (persons)	2	3	6
Number of males who have taken childcare leave (persons)	0	0	0
Rate of childcare leave being taken (%)	100	100	100
Number of persons who have taken nursing leave (persons)	0	0	0

## Human resources system

Our human resources system is based on a performance-based wage system. For clerical workers, the development of competencies\* that are directly related to results is subject to evaluation. The mechanism of the system differs, depending on individual layers, but the records of performance evaluation details are made into a database, enabling evaluation results to be fed back to individuals, securing fairness, objectivity and transparency.

\*Behavioral characteristics commonly observed among those who consistently make high achievements in performing duties.

## Educational training

For all employees or individual layers, we offer a comprehensive range of programs for education and training such as overseas study and auditor system.

### ● Overseas study and training system

In 1987, we established an overseas training system to develop international businesspersons responding to our global expansion, starting with a system to study in the US. Afterwards in 1994, the People's Republic of China was added as a destination for overseas study, and through this training system, employees learn

English or Chinese as well as different cultures at local universities in the US and China. Since the introduction of the system, a total of 33 persons have studied abroad.

### ● University auditor system

To improve the abilities and skills of employees, employees study expertise as auditors at the College of Science and Technology, Nihon University, away from the workplaces. Once a month, an opportunity for exchange among auditors is offered. The program started in 1962, and a total of 21 employees have used the system.

### A message from Mr. Yuichiro Mizuno, studying at Irvine School, University of California since June 2010

Before coming here, I was a salesperson of semiconductor-related packing and transportation material. I was mainly responsible for Korea, and as I communicated with customers in English, not Japanese, I could not sufficiently communicate with customers at certain times, and really felt the need to improve my English. With this as one of the reasons, I decided to go abroad for language study.

During my six months in the US, I selected an English course in the first half and a marketing course in the second half. I have a lot of homework to do for classes, so it is not easy but full of challenges. During my stay, I am in the process of acquiring a command of English while having hands-on experience of the American culture and enjoying daily life.



At Irvine School with a teacher

## TOPICS

### Environmental education

At the Shin-Etsu Finetech Club meeting inviting the top executives of partner companies of our sales subsidiary, Shin-Etsu Finetech Co., Ltd., Mr. Nakamura, manager of the Engineering Group and the Green Movement Secretariat gave a speech on the theme of “Global Warming and International Chemical Industry: ICCA/McKinsey Report.”

The purpose of this ICCA (International Council of Chemical Associations) is based on the message: The chemical industry emits CO<sub>2</sub>e (equivalent carbon dioxide of GHG gas) in its production stage but contributes to the reduction of about three times as much as its emissions in production, which must be appealed more globally. For example, he said, “when one ton of carbon fiber is produced, 20 tons of CO<sub>2</sub>e are emitted, but when the fiber is actually used, it contributes to 50 tons of CO<sub>2</sub>e reduction. It would be a enormous contribution when applied to airplanes” (according to a presentation at JClA).



Mr. Nakamura, manager, giving a lecture at 2010 Shin-Etsu Finetech Club meeting



A book written by Mr. Ayao Hirose, Chairman of the Shin-Etsu Finetech Club and President of HIROPAX Co., Ltd. Since 1971, the company has actively employed many impaired persons, and this book recollects the history of the company.



We received third-party comments to further improve the environmental and social activities of our Group.

## Third-party comments

# Third-party comments on the “2010 Sustainability Report”

In relation to the environmental, social efforts and initiatives of the Shin-Etsu Polymer Group, I am providing my comments after reading the same Group’s “Sustainability Report 2010” (hereinafter referred to as Report) and after interviewing those concerned.

### 1. Expansion of the range of CSR management

We see a general tendency in CSR management by companies in that they have expanded the range of management to entire supply chains to enhance effectiveness toward the realization of a sustainable society. The awareness of this challenge in the Shin-Etsu Polymer Group is very high, and in these two years, dialog by in-house parties concerned have been held, and their detailed account are described in the Report. Especially, in terms of the response to the downstream supply chain, I highly evaluated the fact that an organized methodology has been established and very used consistently.

Toward the future, it is desirable to expand this initiative to the upstream to develop it into CSR management that can manage the entire supply chain. Also, in order to strengthen the involvement of external stakeholders, I think it is necessary to hold a dialog including outsiders.

### 2. Development in terms of the environment

The biggest progress made this year in terms of the environment is that a provision of protecting biodiversity was added to the Environmental Policy. In the last report, the overview of consideration and action toward biodiversity were introduced, and its integration into the Action Policy should be highly evaluated as an indication of the strong commitment of the Shin-Etsu Polymer Group. Though current actions are mainly status surveys in the neighborhood of the plants, as it is essential to evaluate biodiversity risks posed by business activities in order to conduct efficient management, it is desirable to make assessment plans tailored for the real situations of the communities where

Economics Department,  
Sophia University

Professor  
**Yoshinao  
Kozuma**



individual plants are located.

On the negative side, I must point out that energy consumption and CO<sub>2</sub> emissions on the basic unit basis increased for two consecutive years. However, this is due to the decrease in production level due to the Lehman Shock, and its mention in the Report helps readers to understand this point. Similar self-evaluation and careful descriptions are also found in activity results by site, suggesting the Group’s sincere attitude toward disclosure.

### 3. Expansion and improvement of social information

Rich social information is another feature of this year’s Report. Compared with last year’s report, quantitative data on employment was drastically expanded and improved, making the persuasiveness of descriptive explanations better. However, in terms of actual initiatives, there are some concerns about the slight decreasing trend in the rate of paid holidays being taken and insufficient improvement in the employment rate of impaired persons. Whether they are temporary or need more improvement should be reviewed for safety’s sake.

In consideration of the fact that the Group has about 7.5 times as many employees as the independent company, it is preferable that the range of totalization and disclosure of employment-related data should take the entire Group into view, and it is expected a system is build to disclose information on a global basis including the contrivance of disclosure methods that can reflect local characteristics of overseas affiliates.



## In response to third-party comments

Director  
Assistant Chairman, Green Activities  
Promotion Bureau  
**Yutaka Kawamura**

The first point Professor Kozuma indicated was integration of external opinions into the CSR Dialog. This year, on the theme of customers’ green procurement surveys, we had those responsible in house disclose their requirements and response results, but next year, we want to reflect customer opinions upon the dialog on another theme. The second point is

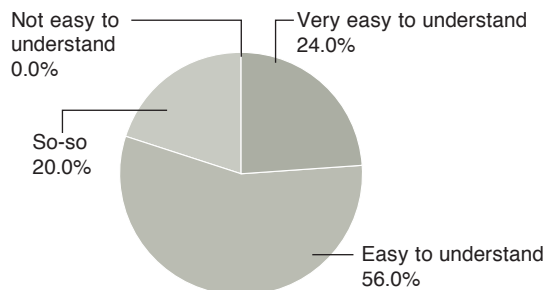
asking us to take a step forward in actions for biodiversity, while the third point says it is desirable to disclose employment data including overseas operations. We would like to make efforts for such improvements.

Future environment themes are (1) climate changes, (2) energy saving, (3) water saving and (4) land utilization, and he told me that environmental risks mean business opportunities. We address new development of not only low carbon products but also energy-saving products and disclose information on water and land utilization of domestic and overseas sites.

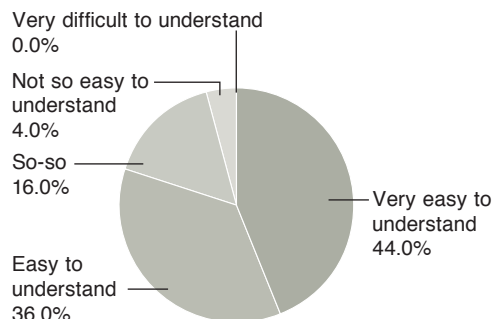
# Questionnaire results & Editor's Note

After releasing the "Sustainability Report 2009," we received readers' responses to our questionnaire. We would like to take your opinions and comments into consideration for future issues. Thank you very much.

## Q. Was the report easy to understand?



## Q. What about the contents?



## Q. Please tell us about your comments, opinions and requests.

- I appreciated the introduction by the president and his message on the radical review of corporate structure focused on not only in-house but also the corporate environment.
- In the round-table discussion to respond to CSR management, persons responsible for each division attended and a discussion took place, showing an attitude to address the challenge as a whole company. The messages from attendants actually responsible are easier to accept than those listed, and were easier to read.

➔ **In the 2010 report, we had major environmental managers discuss how they address environmental quality assurance (product environmental assurance) which customers demand more and more from material and parts suppliers.**

- I could understand well why locally tailored human resource system and how local executives have been developed, thanks to the introduction of transparent and fair human resource system at the production plant in China. It was also good to choose and introduce a country under many heavily criticised in terms of environment and safety in the introduction of overseas sites.

➔ **In the 2010 edition, we chose our Malaysian affiliate founded in 1989 as the first overseas production company of the group. Next year, we plan to cover our Indonesian subsidiary that is the overseas production base of shipping boxes for semiconductor wafers.**

- Descriptions of eco-friendly products were easy to understand and very good. What has been commercialized is most appealing to a first-time reader, and I felt it was a shortcut to enable them to understand our attitude and integration of the environment and technology.
- The environmental report accounts for our environmental initiatives in an easy to understand manner. It is very helpful because against customers' environment-related surveys and CSR procurement surveys, we can cover most of the requirements by submitting this report.
- It is very useful as a tool to use at the time of customer visits and factory tour guidance.
- I was impressed with the data on energy-saving, waste reduction and other data of individual plants listed in the Green Activity results. In trying to meet the international commitment to a 25% reduction of CO<sub>2</sub> emissions by 2020, you are sure to face many difficulties and trouble, and everyone's efforts would be highly appreciated.

### Editor's Note

This is the third time to receive comments from Professor Kozuma. Every year, based on the international environmental and social trends, he gives comments on our year of activities, and we have a lot to learn from it.

He has pointed out that "more attention needs to be paid to the method and contents of the disclosure of social

information" in "contrast with the rich environmental information." This year, we improved the employment-related information and were honored to have this point highly appreciated.

We have often been unable to put into practice his comments and opinions from readers, but we address challenges that we can do and continue to report the



results.

We are looking for your frank and honest opinions on the environmental and social activities of our group.