# 'eco ideas' Report 2010



### **Panasonic Group**





### **Company profile**

Company Name: Panasonic Corporation Head office Location: 1006 Kadoma, Kadoma City, Osaka 571-8501, Japan Tel: +81-6-6908-1121 Founded: March, 1918 (incorporated in December, 1935) Representative: Fumio Ohtsubo, President

Common Stock: 258.7 billion yen



is included in Panasonic's results. The content of 'Net income attributable to Panasonic corporation is the same as the term 'Net income' used until fiscal 2009.

Sales by business segment (fiscal 2010)



Sales by region (fiscal 2010)



Rate of employees by region (at the end of fiscal 2010)



### Main products and services

As of March 31, 2010

Panasonic Group's main products and services by business segment are as below.

#### **Digital AVC Networks**

Plasma and LCD TVs, Blu-ray Disc and DVD recorders, camcorders, digital cameras, personal and home audio equipment, SD Memory Cards and other recordable media, optical pickup and other electrooptic devices, PCs, optical disc drives, multi-function printers, telephones, mobile phones, facsimile equipment, broadcast- and business-use AV equipment, communications network-related equipment, traffic-related systems, car AVC equipment, healthcare equipment, etc.

#### Home Appliances

Refrigerators, room air conditioners, washing machines and clothes dryers, vacuum cleaners, electric irons, microwave ovens, rice cookers, other cooking appliances, dish washer/dryers, electric fans, air purifiers, electric heating equipment, electric hot water supply equipment, sanitary equipment, electric lamps, ventilation and air-conditioning equipment, compressors, vending machines, etc

#### **PEW and PanaHome**

Lighting fixtures, wiring devices, personal-care products, health enhancing products, waterrelated products, modular kitchen systems, interior furnishing materials, exterior finishing materials, electronic materials, automation controls, detached housing, rental apartment housing, medical and nursing care facilities, home remodeling, residential real estate, etc.

#### **Components and Devices**

Semiconductors, general components (capacitors, tuners, circuit boards, power supplies, circuit components, electromechanical components, speakers, etc.), batteries, electric motors, etc.

#### SANYO

Solar cells, lithium-ion batteries, optical pickups, capacitors, semiconductors, digital cameras, LCD TVs, projectors, showcases, commercial air conditioners, medical information systems, refrigerators, washing machines, room air conditioners, car navigation systems, etc.

#### Other

Electronic-components-mounting machines, industrial robots, welding equipment, bicycles, imported materials and components, etc.

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#### Publication objective and editorial policy

- Panasonic started publishing Environmental Data Book in fiscal year 2006 to supplement information disclosed in the Panasonic Report for Sustainability. In consideration of the increasing importance of the environmental sustainability management, Panasonic changed the name of the report to 'eco ideas' Report from fiscal 2010 to report our initiatives towards the environment and the annual data.
- Based on our group-wide vision looking to the 100th anniversary of our founding, this report is composed of "eco ideas' for Lifestyles' and "eco ideas' for Business-styles', and the final settlements of the year in terms of environmental sustainability management as well as initiatives at frontlines are introduced in detail.
- Data reported in this report refers to a global result and the name of a country or region is indicated when disclosing data specific to a particular country or region. More detailed information or those by region is disclosed in the Environmental Activities page on our website.

#### Reporting period and boundary

**Reporting period**: Fiscal Year 2010 (April 1, 2009 – March 31, 2010) The abbreviated year indication in graphs refers to a fiscal year (April 1 - March 31)

Organization covered: Panasonic Corporation and consolidated subsidiaries (excluding SANYO Electric Co., Ltd.) Data covered: All manufacturing sites (274 sites) that have established Panasonic Environmental Management Systems

- •When companies included in the scope of organizations are changed, data is corrected in a retrospective manner.
- •Data without any indications of fiscal years or regions refers to global results in fiscal year 2010.

#### Reference guidelines

- •Environmental Reporting Guidelines 2007 by the Ministry of the Environment, Japan
- •Sustainability Reporting Guidelines 2006 by the Global Reporting Initiative (GRI)

### Living in harmony with the global environment is everyone's responsibility. There is no place for a company that does not fully embrace this spirit.

Today, our world is facing a major turning point.

As global environmental problems become more serious, and as concerns about the depletion of resources and the rise of emerging countries increase, the shift to a sustainable, multipolar society has become a significant common issue worldwide, and people around the globe are taking specific action to make this a reality.

Under our midterm management plan, the "GP3 Plan," covering fiscal years 2008 through 2010, we worked to accelerate our shift toward environmental sustainability management. Reducing the environmental impact of all of our business activities was a major theme of this plan, having the same priority as given to goals involving growth and earnings. Our commitment to society in our contribution to the environment was set out in our 'eco ideas' Declaration. This declaration divides our effort into three categories: 'eco ideas' for Products, producing energy-efficient products; 'eco ideas' for Manufacturing, dedicated to reducing CO<sub>2</sub> emissions across all manufacturing processes; and 'eco ideas' for Everybody, Everywhere, designed to spread environmental activities throughout the world. Our wide-ranging initiatives in these areas have enabled us to achieve a great many of our objectives. In particular, we promised to reduce global CO<sub>2</sub> emissions in production activities by 300,000 tons compared to fiscal 2007, and have managed to far exceed this midterm goal, achieving a reduction of 840,000 tons. We also held a "Panasonic Eco Relay," in which employees, their families, and others in the community

took part in environmental conservation activities in 39 countries and regions around the world. In two years, our initiatives have numbered over 1,000, indicating the steady progress we have made in our effort to live in harmony with the environment on a global scale.

### We will spur innovation in society from within our day-to-day lives. By integrating our environmental contribution and business growth, we will realize a major paradigm shift.

When formulating our new management plan to begin in fiscal 2011, following the "GP3 Plan," we thought that we had to build on our strengths to further evolve our environmental sustainability management. Panasonic' s business activities have always been carried out giving close attention to everyday life, and it has enabled us to build strong ties with our customers. These ties are our greatest asset. And, in working to expand our business globally, we have always sought to establish strong roots in the regions and countries in which we serve. In light of this, I believe that, moving forward, we must squarely address the task of realizing a sustainable society and take the lead in spurring innovation which takes hold in our daily lives to benefit the next generation of people around the world.

With this in mind, looking to the year 2018, the 100th anniversary of our founding, we have set our goal, which is to become the "No.1 Green Innovation Company in the Electronics Industry." To realize this vision, we will take a comprehensive approach to ensure that we make the environment central to all of our business activities, and allow for no exception.

Specifically, we will focus on two types of innovation.

As a public entity of society, we aim to become the No.1 Green Innovation Company in the Electronics Industry through the combined efforts of all of our employees around the world. The ideas we provide through our "Green Life Innovation" will make possible a green lifestyle to enrich people's lives, while our "Green Business Innovation" will focus on achieving a maximum reduction in the environmental impact of our own business activities, and we will offer this new way of doing business to society at large. We have also established new benchmarks to realize this vision. We will work to continually meet our "global excellence indexes," including sales of at least 10 trillion yen and ROE of at least 10%. At the same time, we aim to become number one in the four "green indexes" taken as a whole. These green indexes include our contribution to reducing CO<sub>2</sub> emissions and our contribution to recycling resources.

As we worked out our 100th anniversary vision, we also completely renewed our 'eco ideas' Declaration, focusing on 'eco ideas' for Lifestyles, aiming to promote lifestyles with virtually zero CO<sub>2</sub> emissions all around the world, and 'eco ideas' for Business-styles, aiming to create and pursue a business-style which makes the best use of resources and energy. Making a new commitment to society, we will always implement and pursue these ideas.

In May of this year, we announced our new midterm management plan, "Green Transformation 2012" (GT12), which is the first step towards achieving this vision. With the addition of Sanyo Electric Co., Ltd., the new Panasonic Group is working to build a foundation to realize a major paradigm shift and become a Green Innovation Company.

### In order to make a contribution closely tied to the everyday lives of the people in the various countries and regions, we will put to use the individual traits and abilities of our diverse workforce worldwide.

Organizational growth and business growth are nothing more than the sum of the growth of individuals. To contribute to the development of an increasingly multipolar global society, it is essential that we nurture a corporate culture where a greater diversity of people than in the past interact, appreciate one another's values, compete with one another, and grow ever stronger. At Panasonic, this kind of diversity is actively being promoted, describing it as "irimajiru," or "mixing together." Panasonic has nearly 380,000 employees around the world, and they are people having unique individual personalities and abilities, people from a variety of backgrounds in terms of country, region, culture and history, people of many different nationalities, varying in age, men and women. Our hope is that as we all extend ourselves beyond the boundaries of our nation and organization, actively exchange ideas with each other, and renew ourselves, we will become a company capable of providing innovative products and services to customers around the world.

Based on our basic way of thinking regarding personnel development - "Develop people before making products" - we aim to continue to pursue diversity in our employees that is worthy of Panasonic.

### As a "public entity of society," we will continue working to contribute to sustainable growth in society through our manufacturing activities, which are our core activities.

Long before the word CSR was in wide use, Panasonic's activities were already guided by our management philosophy which states that a company is a public entity of society. Our founder, Konosuke Matsushita, often said that, "Companies and society are not separable, but rather are a single entity." Companies that think of themselves as acting separately from society, will take a passive attitude, and simply follow along with the laws, rules and other expectations of society. But if companies realize that they are also truly members of society, they will ask themselves what is really right for society, and how they should best behave. And they will begin to sincerely listen to society and learn from society, and will spontaneously take the initiative and act. We believe that this is what having a "corporate conscience" means. I hope that all employees at Panasonic will look into their own "corporate consciences," and act in ways that contribute to sustainable growth in society. By always behaving with this kind of sincerity, the Panasonic Group aims to continue to contribute to society and be trusted by society.

> Fumio Ohtsubo President Panasonic Corporation

F. Ohterbo

### Management Policy for fiscal 2011 marks a major turning point

On January 8, 2010, President Ohtsubo put forth a clear statement of Panasonic's new vision: To become the No. 1 Green Innovation Company in the Electronics Industry by 2018 (fiscal 2019), when Panasonic will celebrate the 100th anniversary of its founding. It was a very significant message from top management as Mr. Ohtsubo reviewed Panasonic's activities over the last nine years and launched a new strategy toward 2018.



In 2001, Panasonic formulated its Green Plan 2010, an environmental action plan for the creation of a sustainable social system and lifestyle. In creating this plan, we first set our aspirations for fiscal 2011 and then clearly defined specific targets with the backcasting method. The plan covered the full gamut of environmental activities, ranging from those to be taken at the stages of product development and manufacturing to other items related to communications with stakeholders. We have been systematically implementing the plan, while regularly reviewing it to set higher targets as required (see p. 34).

### Review of the GP3 Plan (three-year plan to 2009) and accomplishment of Green Plan 2010

In October 2007 Panasonic marked a major turning point by deciding to incorporate the concept of environmental sustainability management into the entire company's management plan and thereby further accelerate its environmental management already regarded important at that time. The "GP3 Plan" was a midterm management plan designed to put Panasonic in a position take on the challenge to achieve global excellence through steady growth with profitability. In this plan, we introduced the idea of achieving both business growth and the reduction of our environmental impact. Focusing on the prevention of global warming as an urgent issue, we crystallized initiatives centering on CO<sub>2</sub> reduction into an 'eco ideas' Declaration consisting of three simple 'eco ideas', and incorporated the ideas into the Green Plan 2010.

Our 'eco ideas' for Products is based on our unrelenting efforts to improve energy efficiency, where we worked to increase the percentage of industry-leading energy-efficient products and to minimize the number of products with low energy efficiency. In April 2009, we opened our 'eco ideas' House, where we are proposing a lifestyle with virtually zero CO<sub>2</sub> emissions throughout the entire house, which can be actually realized in three to five years into the future.

Our 'eco ideas' for Manufacturing is based on our commitment to reduce total CO<sub>2</sub> emissions in production activities while increasing production. In fiscal 2007, the total CO<sub>2</sub> emissions from all our global manufacturing sites came to 3.98 million tons and we set the target of reducing emissions by 300 thousand tons over three years. To this end, we reviewed all our related business activities and implemented reduction strategies proactively. Due to the steady reduction efforts made at our manufacturing sites, we were able to reduce CO<sub>2</sub> emissions by 840 thousand tons, far exceeding the target, albeit the rapid economic downturn in 2008 played a partial role.

For our 'eco ideas' for Everybody, Everywhere, we promoted a Global Eco Project, in which each of our business entities across the world undertook various environmental projects, including the development of products tailored to regional needs. Based on our many initiatives, we were able to achieve the targets for fiscal 2010.

Through continuous implementation of a wide range of initiatives during the nine years since 2001, we have been able to achieve almost all the targets set forth in the Green Plan 2010 one year earlier than planned, thereby fulfilling the aim we set in the formulation of the Plan. Thanks to the group-wide concerted efforts, these last nine years have been most fruitful, positioning us for a further leap into a new phase.

### Vision looking to the 100th anniversary of our founding and the "GT12" plan

We have established "green indexes" and "global excellence indexes" with specific targets to realize our vision for our 100th anniversary. We will work hard to always meet our "global excellence indexes," numerical management targets, and at the same time we aim to become industry No.1 in "green indexes" as a whole, which consist of four items: "contribution to reducing CO<sub>2</sub> emissions," "contribution to recycling resources," "increasing the size of the energy systems business;" and "achieving a higher sales percentage of No.1 eco-conscious products."

#### Indexes of No. 1 Green Innovation Company in the Electronics industry

Be industry No.1 in green indexes		Always meet global excellence indexes
Contribution to reducing CO <sub>2</sub> emissions		• Sales: 10 trillion yen or more
Contribution to recycling resources     No.1	+	•ROE: 10% or more
Size of energy systems business     Percentage of sales for     No.1 eco-conscious products		• Having multiple key products with a No.1 global market share

We have taken a step forward focusing on reducing CO<sub>2</sub> emissions and have set broader targets including resource recycling and building an Energy Systems Business. Further, we have expanded again our anti-global warming measures: We have extended the scope of our target from CO<sub>2</sub> emissions reduction in our production activities

### **Vision and Strategy**

to contribution in reducing CO<sub>2</sub> emissions across all our business activities, including making our products more energy-efficient, which will in turn reduce emissions from their use by our customers.

The first step toward the achievement of the vision for our 100th anniversary is the "Green Transformation 2012" (GT12). In particular fiscal 2011 is the first year of the "GT12" plan and important for the achievement of the vision. Within fiscal 2011, we will newly formulate an environmental action plan to replace the Green Plan 2010 toward fiscal 2019. We will announce our new plan within fiscal 2011 and start to work on it.

#### Contribution to reducing CO<sub>2</sub> emissions

In accordance with an increase in demand in the markets of emerging economies, our global total CO<sub>2</sub> emissions will inevitably increase. Nonetheless, at the Hokkaido Toyako Summit, world leaders agreed to reduce global CO2 emissions by half by 2050, necessitating an actual decrease. To contribute to this global goal, we will implement measures to bring about a CO<sub>2</sub> emissions peak both from our production activities and from the use of our products, and decrease our emissions thereafter. In order to measure progress, we set a new goal: "size of contribution in reducing CO2 emissions," which is defined as the amount of CO2 emissions reduced as a result of specific measures compared to the estimated amount of increased CO<sub>2</sub> emissions if no measures were taken. Through this initiative, we can show our continuous commitment to CO<sub>2</sub> emissions reduction in all our business activities and, by pursuing it as best we can, we will eventually be able to reduce total emissions from our entire operations, while further developing our business. By fiscal

2019 we aim to reduce our CO<sub>2</sub> emissions by half from the estimated amount assuming no measures were taken after fiscal 2006, a base year, or approximately 120 million tons. During the three-year period for the "GT12" plan, we will strive to increase the amount of contribution in reducing CO<sub>2</sub> emissions to 50 million tons.



Size of contribution in reducing

\*Products included here are only main finished products

#### Contribution to recycling resources

With the rapid growth in the emerging economies, resource recycling is increasingly attracting the attention of the public in addition to responding to global warming. Therefore we have added "contribution to recycling resources" through recycling-oriented manufacturing to our targets. Accordingly, we will implement comprehensive measures throughout all our manufacturing processes, from the procurement of materials to recycling. In the design and procurement stages, we will enhance the level of 3R design (Reduce, Reuse, and Recycle) and promote the use of recycled resources. In production and product disposal stages at our factories, we will accelerate the development of recycling technologies and work hard to pursue zero emissions.

Toward fiscal 2019, we will minimize the amount of total resources used, and maximize the use of recycled materials as well as the amount of resources recycled from waste products. In addition, we have established a target of decreasing waste from our production activities to zero. In the "GT12" plan, we aim to increase the ratio of recycled resources used to total resources used to more than 12% and to increase the recycling rate of waste at plants to 99% or higher.

#### Contribution in recycling resources



#### **Energy Systems Business**

To integrate environmental contribution into business growth, we have positioned the Energy Systems Business as a flagship business within our Group and intend to achieve a high annual growth rate of 16% for this business. We will actively engage in "energy creation" through photovoltaic power generation systems and fuel cells, "energy storage" using the lithium ion batteries, and energy management that connects products and systems designed for "energy saving," "energy creation" and "energy storage" optimizing energy control. In addition, we will promote eco car-related businesses, and fully utilize the synergy created by SANYO Electric's addition to our Group. In this way, we will work hard to provide energy solutions.

Toward the attainment of our 100th anniversary vision, we have renewed our 'eco ideas' Declaration to focus on 'eco ideas' for Lifestyles and 'eco ideas' for Businessstyles. We will make the "environment" central to all of our business activities and spur innovation. As we pursue our new vision, we aspire to a management where the more our business grows, the greater we contribute to the environment, and the more we contribute to the environment, the more our business grows.

# New 'eco ideas' Declaration The Panasonic Group strives to be a Green Innovation Company with a global perspective 'eco ideas' for Lifestyles We will promote lifestyles with virtually zero CO<sub>2</sub> emissions all throughout the world 'eco ideas' for Business-styles We will create and pursue a business-style which makes the best use of resources and energy

# 'eco ideas' for Lifestyles

## We will promote lifestyles with virtually zero CO<sub>2</sub> emissions all throughout the world.

Panasonic has been globally manufacturing products in consideration of the environment from the following three viewpoints: prevention of global warming; effective use of resources; and management of chemical substances. Over the past three years, we have been committed to creating over 200 models to be classified as Superior GPs (products that have achieved the industry's top-class environmental performance), and have actually developed 395 Superior GPs, nearly double the target. In the Japanese market, we worked to increase the ratio of industry-leading energy-efficient products to 30% while reducing the ratio of products with lower energy efficiency in reference to the Energy Conservation Performance Catalog.\* As a result, the ratio of industry-leading energy-efficient products came to 23% and that of products with lower energy efficiency. We will continue to make efforts in this regard.



### Initiatives for Green Products

### Green Product accreditation criteria and assessment system

Panasonic has been utilizing an environmental assessment system for its products, under which we assess an environmental impact of our products right from their planning and design stages. Based on the assessment results, we accredit products and services with higher environmental performance as Green Products (GPs). Furthermore, we accredit products that have achieved top environmental performance in the industry as Superior GPs and trend-setting products toward achieving a sustainable society as Super GPs.

#### Green Product Accreditation Criteria (Fiscal 2010)



#### Green Product assessment system

Manufacturing	Product Environmental Assessment (Version 6)				
		Saving	Amount of energy consur	nption	
Final	Products	3Rs⁺¹	Verified recyclable rate, suitability of separation standardization of materials, light weight/ downsizing, amount of recycled material use, amount of consumables use, etc.		
manufacturing		Co	Comparison with other companies' products		
Interim	Draduation	Saving	Amount of energy consumption and CO <sub>2</sub> emissions		
Design Production		3Rs	Reduction of outsourced packaging mater amount of emissions, amount of waste fro factories, and amount of resources use		
Targets	Packaging	3Rs	Recyclable rate, light weight/downsizing, standardization of materials, amount of recycled material use, amount of foamed plastic use, etc.		
	Instruction manual	nstruction Light weight/downsizing, amount of recycled materials use, and use of environmentally-conscious materials			
Planning		Overall assessment			
1	L	LCA*2, eco-efficiency, information management			
			1	1	
Customers' feedback	Compliance with laws	e Gi • Gi • Cl • M • M rel	iteria and Guidelines reen Procurement Standard nemical Substances anagement Rank Guidelines anuals for material and 3Rs- lated labeling	GP-Web system Environmental information on parts and materials	

<sup>\*1.</sup> Reduce, Reuse, and Recycle

\*2. A method of quantitatively assessing the environmental impact of products at each life cycle stage

In the Green Product Accreditation System, we assess the environmental performance in terms of the prevention of global warming and the effective utilization of resources by making comparisons not only among our own products but also with the products of other companies. In addition, we are endeavoring to appropriately manage chemical substances that might adversely affect the environment.

In fiscal 2011, we will enhance Green Product Accreditation System to add more competitive edge to our products.

#### Life cycle assessment of environmental impacts

Panasonic's Product Environmental Assessment implements the life cycle assessment (LCA) of environmental impacts that its products might give on the environment. Specifically, we analyze and evaluate the environmental impacts of our products such as CO2 emissions throughout their life cycles, from the procurement of materials, manufacturing, transportation, and use to disposal. In the LCA, we calculate the improvements (in CO<sub>2</sub> equivalent) made through various energy conservation measures seeking improvement of global warming, and compare the evaluation data of the latest models of our major products with the data of the fiscal 2001 models (see pages 9 and 10). As shown in the following LCA example, CO<sub>2</sub> emissions from products tend to be largest in the use stage (in operation and standby modes) and we can therefore maximize CO<sub>2</sub> emissions reduction in the lifecycles of our products by implementing drastic energy conservation measures targeting their use. Moreover, we can also reduce CO<sub>2</sub> emissions through the downsizing of materials used for the products and by increasing the energy efficiency of our factories during manufacturing. We thus use LCA not only to identify the improvement effects at each of the lifecycle stages but also to make further improvements.

For assessment methods for the use stage, we comply with the Act on the Rational Use of Energy of Japan and the industry standards as required.

#### Example of LCA (Tilted-drum washer/dryer)



### **Energy Conservation in Products**

### Initiatives for energy conservation

As measures to increase the energy efficiency of our products, we are endeavoring to improve their power efficiency in use and standby modes by reviewing their basic circuitry. In addition, we are adopting new technologies, such as heat pumps and LEDs, and improving the heat insulation performance of our products through the use of vacuum insulating materials.

In fiscal 2010, we developed ECO NAVI (eco-navigation) functionality to increase the energy efficiency of our products. Equipped with this function, air conditioners will optimally control the airflow volume and room temperature by identifying the positions of people, furniture, and the volume of sunshine for the most energy-efficient operation. Washer/dryers will conserve energy and water by discerning the amount of clothes and how soiled they are. Vacuum cleaners will control their suction power by discerning the amount of house dust to save power consumption. Lighting equipment will optimally control their luminance according to the brightness of the room for energy conservation. In addition, we produce TVs, refrigerators, rice cookers, dish washer/dryers, heated toilet seats with warm water sprays, A La Uno (self-cleaning toilet), and Eco Cute (water heater) equipped with this function. As of April 2010, a total of 11 product items are equipped in this way.

### Plasma TV



By adopting the newly developed black panel with almost doubled luminous efficiency\*, we have achieved an annual power consumption of 154 kWh. \* Compared with 2009 panel only.

### [LCA on CO<sub>2</sub> emissions]

Entire life cycle: Reduced by 62%

- Operation: Reduced by 69% due to a decrease in power consumption
- Standby: Reduced by 96% due to a decrease in power consumption
- Materials: Reduced by 41% due to weight reduction and more efficient manufacturing



### Refrigerator

By developing a highly efficient compressor and cooling device and adopting a high-performance vacuum insulator 'U-Vacua IV', we have achieved an annual power consumption of 360 kWh.

### [LCA on CO2 emissions]

Entire life cycle: Reduced by 44%

 Operation: Reduced by 47% due to a decrease in power consumption



### Tilted-drum washer/dryer

By adopting the heat pump drying method that uses atmospheric heat, we have achieved power consumption of 860 Wh for drying in the standard cleaning mode.

#### [LCA on CO<sub>2</sub> emissions]

Entire life cycle: Reduced by 56% (Calculated with the washing/drying rating capacity of 6 kg)

- Operation: Reduced by 70% due to a decrease in power consumption
- · Reduced by 21% due to water saving
- Materials: Reduced by 14% due to weight reduction







### Air conditioner



By adopting a unique hybrid heat exchanger and compressor, we have achieved the industry's topclass seasonal power consumption of 1,272 kWh.\* \* For 4.0 kW-class air conditioners for household use sold in Japan (as of October 8, 2009).

### [LCA on CO<sub>2</sub> emissions]

Entire life cycle: Reduced by 24%

· Operation: Reduced by 24% due to a decrease in power consumption



### **Digital cordless phone**

By improving power efficiency by replacing the regulator-type power source with a DC/DC convertertype, we have achieved power consumption of 0.45W

Entire life cycle: Reduced by 47%

- Operation: Reduced by 49% due to a decrease in
- Standby: Reduced by 49% due to a decrease in
- · Materials: Reduced by 44% due to weight reduction





### Heated toilet seat with warm water sprays

By adopting the "double sensor control function" and the unique "double instant heating" method, we have achieved the industry's No. 1 energy conservation\* (energy conservation achievement rate of 180% in the instant heating method). \* As of August 25, 2009.

#### [LCA on CO<sub>2</sub> emissions]

Entire life cycle: Reduced by 68%

- Operation: Reduced by 70% due to a decrease in power consumption
- Standby: Reduced by 75% due to a decrease in power consumption



### **Energy Creation**

#### Approach to energy creation

As a challenge into a new area, Panasonic is proactively conducting energy creation business, taking one step forward from making its products more energy-efficient. Specifically, in addition to reducing energy use and CO<sub>2</sub> emissions, we are developing household fuel cells and solar power generation systems as means to create necessary energy by utilizing low-emission power generation methods.

### **Energy-creating devices**

Fuel cells are highly energy-efficient and energy-saving because they generate electricity through a chemical reaction between hydrogen extracted from town gas and oxygen in the air, and heat water with the heat generated from the reaction at the same time. While CO<sub>2</sub> is emitted during operations because town gas is used, this system has a feature that can stably generate electricity regardless of the season, weather, or time.

In May 2009, we became the first company in the world to sell a household fuel cell cogeneration system (named ENE FARM) via a gas company and shipped 2,100 units by February 2010. The power generation efficiency is 35% HHV<sup>\*1</sup> (world's top level<sup>\*2</sup>) at the maximum, and the total energy conversion efficiency, including that of hot water supply is 85% HHV. Compared with electricity supply from a thermal power station and heat supply from a water heater using town gas, a house can expect saving about 1.5 tons of CO<sub>2</sub> emissions per year<sup>\*3</sup> by using this system.

- \*1 Higher Heating Value: Efficiency calculation including the condensation heat of vapor and the latent heat of vaporization
- \*2 As of April 2009 (surveyed by Panasonic).
- \*3 Estimated by Panasonic by using the following CO<sub>2</sub> conversion factors: Gas: 2.29 kg-CO<sub>2</sub>/m<sup>3</sup> and electricity: 0.69 kg-CO<sub>2</sub>/kWh (by thermal power generation).



Household fuel cell cogeneration system (1 kW)

In solar power generation, solar light energy is directly transformed into electricity by semiconductors. The power generation amount is affected by the season, the weather, and the time, but unlike thermal power generation in which fossil fuels are burnt to generate electricity, no CO<sub>2</sub>, exhaust gas, or ashes are emitted during power generation.

The HIT solar cells developed by SANYO Electric Co.,

Ltd. are uniquely structured with layers of amorphous silicon thin films and monocrystal silicon and have dramatically increased the amount of power generation, with the world's top-level power generation efficiency.<sup>\*4</sup> For the HIT solar cell module, HIT NKH210, the annual

predicted power generation amount per installation area has been increased by about 38% compared with a conventional 150-watt crystalline solar cell module. \*4 As of May 2010 (surveyed

by Panasonic).



HIT solar cells installed on the roof of a house

### **Energy Storage**

### Approach to energy storage

'Energy-storing' devices, in which we can store energy and use it when needed, enable stable energy supplies. These devices are indispensable for the efficient use of renewable energy, such as solar power generation and wind power generation in particular. Panasonic positions lithium ion batteries as a core product for its 'energy storage' business, and is working on products to have even higher capacities and developing lithium ion battery modules.

#### **Energy-storing devices**

With greater expectations for the use of renewable energy sources such as the use of household solar power generation systems and the practical use of electric vehicles, it is critical to develop energy storage systems. In particular, power storage systems using lithium ion batteries are greatly expected to be put into practical use because they are lighter and have higher capacity compared with products using other types of rechargeable batteries.

Panasonic has been developing and mass-producing 18650-size lithium ion batteries (18 mm diameter x 65 mm height) with the industry's top-level capacity for its size,\* which are generally used in notebook PCs. We have also developed a 1.5 kWh-type battery module utilizing 18650-size lithium ion batteries. Connected in series or parallel, the battery modules can be applied to the environmental energy field as various power sources including power storage systems for solar power generation and fuel cells, and electricity for electric vehicles. \* As of December 2009 (surveyed by Panasonic).



Lithium ion battery module (1.5 kWh)

### Virtually Zero CO<sub>2</sub> **Emissions throughout** the Entire House

### Proposing a lifestyle with virtually zero CO<sub>2</sub> emissions through energy saving, creation, storage, and by linking devices

Following economic growth and increase in the number of households, it is feared that CO2 emissions from the household sector will rise even more. Panasonic provides a range of products for homes, from various home appliances to the houses themselves. In order to effectively reduce CO2 emissions from households, we believe it is important to implement comprehensive measures from individual devices to houses themselves, for which Panasonic can help consumers in a unique way that no other company can do. We call this unique way "throughout the entire house."

We promote the reduction of CO<sub>2</sub> emissions throughout the entire house by energy saving, creation, and storage. As shown in the figure below, which is an estimation based on a model family, it is possible to reduce CO2 emissions from a household by 65% relative to the 1990 level in three to five years from now by increasing the energy efficiency of devices and reducing power consumption from the entire house. For energy yet necessary even after saving (which is equivalent to the remaining 35% of CO<sub>2</sub> emissions), a combination of energy creation through fuel cells, solar power generation, and energy storage through household lithium ion accumulator batteries will be supplied to make the CO<sub>2</sub> emissions throughout the entire house virtually zero. We call this concept "virtually zero CO2 emissions throughout the entire house." To achieve this idea, we also propose to link the devices used in the house with a home energy management system (HEMS) for the more efficient use of devices, and by an in-house AC/DC hybrid wiring system for more efficient power use. Networking all the appliances and equipment in a house can help achieve virtually zero CO<sub>2</sub> emissions throughout the entire house.

### Concept of virtually zero CO<sub>2</sub> emissions throughout the entire house CO<sub>2</sub> omissions



Conditions for calculation (model family)

 Family and house: A four-member, three-generation household comprising a grandmother aged 70, a father aged 40, a mother aged 37 and a daughter aged 6 living in a two-stor house, which has four rooms plus a Japanese-style room with a total floor area of 136.9 square meters (national average in Japan). Products comprising the house: The year of 1990: Latest models that we produced and

marketed at that time in consideration of the rate of diffusion to general households at 10%. The year of 2009-201X: Latest products selected by Panasonic in consideration of the rate of diffusion to general households at 10% and changes in lifestyles (increase in the number and size of products used in the house).

### In-house AC/DC hybrid wiring system

In addition to the already commercialized HEMS, an inhouse AC/DC hybrid wiring system which links devices within the home, is currently under development.

There are two types of electricity: one is AC electricity transmitted from power companies to households and used through electric outlets; the other is DC electricity produced by solar power generation facilities and fuel cells. AC electricity has benefits such as small loss during transmission and safety in the installation of necessary equipment, but because some devices such as TVs, PCs, and LED lighting are powered by DC electricity, there is a need to convert from AC to DC, which causes energy loss. We have focused on the fact that fuel cells, solar power generation, and accumulator batteries generate and store energy by DC, and are developing an in-house AC/DC hybrid wiring system which allows utilization of generated DC electricity without converting it to AC. We will achieve further energy conservation through supplying electricity from power companies to devices powered by AC electricity, and electricity from fuel cells, solar power generation facilities, and batteries to devices powered by DC electricity.

#### In-house AC/DC hybrid wiring system



### 'eco ideas' House

Panasonic built its 'eco ideas' House within the premises of its showroom, Panasonic Center Tokyo in Ariake in April 2009. Visitors to the house can experience a lifestyle with virtually zero CO<sub>2</sub> emissions throughout the entire house, which will become a reality in three to five years from now by saving, creating, storing energy, and utilizing linking devices. In this special house, we also propose a comfortable lifestyle that can be achieved by utilizing natural blessings such as air, light, water, and heat, while reducing energy use.



Outer appearance of the 'eco ideas' House

### Resource Conservation in Products

### Initiatives for promoting effective utilization of resources

We are taking a two-pronged approach to promote the effective use of resources in our products: (1) reduction in the total resources used (by reducing product mass weight and consumables used by consumers), and (2) use of recycled resources. In fiscal 2010, we developed 167 Superior GP models, achieving a 29% increase over the previous fiscal year level. As for recycled resources, we used about 2,600 tons of recycled plastic, about 160 tons of plant-based plastic, and about 40 tons of bamboo.

#### Resource conservation system



Product mass weight

Amount of consumables

Plant fibers

#### Digital camera

- Achieved a body mass weight of 371 g for an interchangeable lens digital SLR equipped with a moveable LCD
- Reduced the mass weight by about 27% compared with the fiscal 2008 Panasonic model (DMC-L10)

#### Drum washer

- Achieved water consumption of 50 liters for a washing capacity of 8.0 kilograms (6.25L/kg)
- Achieved optimal operation for the specific type and volume of clothes by multilevel control of the revolution speed through three-dimensional sensing of the drum's movement

#### Bamboo fiber speaker

- The industry's first 100% bamboo fiber diaphragm
- Developed a small, thin, lightweight high-quality diaphragm using advanced technologies to improve the mechanical strength of bamboo fibers and to ensure optimal rigidity and shape design



DMC-G2 (Japan, North America, Europe, China, Asia, etc.)







Bamboo fiber speaker (Japan, North America, Europe, China, Asia, etc.)

### Initiatives for Packaging Materials

### Measures for optimal packaging

In recent years, the use of packaging materials has been increasing due to an increase in the number of large products. Panasonic has been implementing measures to reduce the environmental impact of packaging materials without compromising the safety of the products to be transported. Specifically, we are reducing the use of cardboard and foamed polystyrene materials, reusing packaging materials for transportation between our factories, and improving load efficiency in transportation. Moreover, we are making efforts to curb the increased use of packaging materials. For example, we are improving product strength and selecting/designing appropriate buffer materials for each product item, by repeating tests.

### Resource-saving packaging for TVs

For the transportation of our 42-inch plasma TVs sold in North America (TH42PX80U), Panasonic has been committed to increasing the loadable quantity and lessening use of packaging materials by reducing the depth of the packaging boxes, which seemed to be the most effective means of increasing the quantity loaded into a container. For the packaging design, we visualized the deformation of the buffer materials by the use of a high-speed camera to minimize the use of packaging materials while ensuring the appropriate protection for the products. For product design, we conducted simulations to analyze the impacts of a fall to develop an efficient and impact-resistant product structure. By thus optimizing the shape of the buffer materials and the product structure, we reduced the depth of the packaging boxes from 463 mm to 332 mm, thereby reducing the use of packaging materials from 7.92 kg to 4.74 kg. As a result, the products are now loaded in a container in seven rows, up from five rows, with the loading efficiency improved by 40%. This has also resulted in a reduction in per-unit CO<sub>2</sub> emissions from the transportation of the TVs.

### 'eco ideas' packaging (Japan)

We have developed environmentally-conscious packages by reducing the use of inks through monochrome printing

ideas

装材使用量多

'eco ideas

package mark

パッケ-

and also by reducing the packaging materials themselves. Packages that meet our own criteria\* are labeled as 'eco

ideas' packages.

\* 20% or more reduction in the printing space, 15% or more reduction in the amount of packaging materials used, 15% or more reduction in the amount of foamed polystyrene used, no use of expanded polystyrene, etc.

'eco ideas' packages

### Compliance with Environmental Laws and Regulations on Products and Labeling

### Trends in energy conservation regulations enforced in other countries

Among environmental laws and regulations on products, those concerning energy conservation are particularly widely enforced throughout the world. As for the regulations on standby power, which relate to a number of products, the standard values are set at 2 to 3 W for TVs, DVD players, and audio products in California in the United States; in Europe, the regulatory standard was set at 1 W under Lot 6<sup>\*1</sup> of the ErP Directive<sup>\*2</sup> and the sales of products that do not meet this standard is now prohibited. In January 2013, the standards will become even stricter—to 0.5 W. Under Lot 5<sup>\*3</sup> of the ErP Directive, the standard will be set at 0.5 W as early as from August 2011.

In households, standby power accounts for about 6%<sup>\*4</sup> of total power consumption, and many countries are strengthening their regulations on standby power to help reduce global warming.

- \*1 Commission Regulation on standby and off-mode power consumption.
- \*2 Directive on the eco-design of energy-related products.
- \*3 Commission Regulation on the eco-design of TVs.
- \*4 Source: Energy Conservation Center, Japan.

### Response to regulations on standby power consumption

Panasonic has been fostering the development of energysaving product models, setting company-wide targets to comply with any future regulations on standby power consumption, in addition to complying with existing environmental laws and regulations on products. Under the European ErP Directive, standby power consumption will be regulated at 0.5 W from January 2013, and Panasonic products to be newly released in and after April 2012 will meet the requirements of these regulations. For TVs, however, we will comply with the regulations earlier—by August 2011—to comply with Lot 5. We will also reduce the standby power consumption of products other than those covered by the ErP Directive, these to be independently selected by our sites.

As for our Mini Compo (home audio system), we undertook a full review of its behavior in standby mode and newly equipped each of the products with a special power source to be exclusively used in standby mode. Moreover, by digitizing the power source and improving its efficiency, we achieved the industry's highest-level efficiency\* of 0.04 W in standby power consumption for our fiscal 2011 Mini Compo SC-HC30 model.

#### \* As of April 2010.

### Environmental labeling

Panasonic clearly shows the environmental performance of its products to consumers by attaching environmental

labels to products and catalogs, demonstrating their environment-friendliness.

We attach our own 'eco



Panasonic's eco label

ideas' label to our products with high environmental performance in line with the environmental criteria implemented in each region. The International Energy Star Program is an international labeling system for energy conservation in office devices, and is implemented in seven countries and regions across the world. Manufacturers can attach the Energy Star label to their products that meet the criteria of the program. This is a voluntary program and compliance with its criteria is not legally required, but Panasonic has been proactively joining the program to increase the number of its energy-saving products.

Also, in China, we are proactively joining a range of local voluntary labeling programs to better communicate the environmental friendliness of our products to consumers.

Lists of products satisfying the International Energy Star Standard

Item	Number of models accredited in fiscal 2010	
Notebook PCs	26	Inergy ?
Fax machines	4	- on
Multi-function machines	3	ENERGY STAR
Scanners	3	Energy Star
Total	36	declaration mark

\*Products that are registered under the International Energy Star Program of Japan.
http://www.eccj.or.jp/ene-star/index\_esu.html

List of products that acquired environmental labels in China (April 2009 -March 2010)

Item	Energy conservation	Water conservation	China Environmental Labeling Type II*	China Ecolabeling
Plasma TVs	-	-	13	-
LCD TVs	-	—	5	-
LCD projectors	20	-	-	20
Washing machines	10	10	3	-
Air conditioners	32	_	2	-
Refrigerators	12	_	2	-
Microwave ovens	6	-	-	-
Multi-function machines	2	—	_	—
Printers	1	_	-	—
Fax machines	2	_	-	_
Total	85	10	25	20

\*The International Organization for Standardization (ISO) classifies environmental labels into the following three types: those the use of which is approved by certification bodies in each country (Type I); those that represent self-declared claims made by companies (Type II); and those that show quantified environmental impact data (Type III).

#### Environmental labels used in China



### Management of Chemical Substances in Products

### Concept of the management of chemical substances

Panasonic has been manufacturing products in line with its basic policy, which is to minimize the use of chemical substances that might adversely affect human health and the environment throughout their life cycles.

In 1999, we published our Chemical Substances Management Rank Guidelines (Ver. 1) and have thoroughly managed chemical substance use since then. Specifically, we classify substances which are prohibited by law and regulation in specific regions as Prohibition Level 1 substances, and globally prohibit their use in our products immediately. Also, for chemical substances which are not yet to be prohibited by law but might damage the environment, we classify them as Management Level substances. In addition to these, we classify substances in Management Level with particularly high environmental concerns as Prohibition Level 2 substances and partially prohibit the use of them in our products.

### Formulating new guidelines for a precautionary approach

As represented by the enforcement of the REACH regulation\* in the EU, the world is moving toward the goals agreed at the World Summit on Sustainable Development (WSSD) held in 2002, which is to produce and use all chemical substances in a manner that minimizes their impact on human health and the environment by 2020.

In support of the precautionary approach proposed in the Rio Declaration made at the Earth Summit in 1992, Panasonic has been revising its Chemical Substances Management Rank Guidelines and published the sixth version in March 2009. We also published the seventh in February 2010 to comply with the regulations enforced in Europe on the use of organic tin compounds in products. Based on the revised guidelines, we are checking the use of chemical substances in our products, assessing their environmental impact, and reducing or discontinuing the use of substances of high concern based on the assessment results.

\* Regulations on the registration, evaluation, authorization, and restriction of chemical substances.

#### Chemical Substances Management Rank Guidelines Ver. 7 (for Products)

Rank		Definition		
Prohibited		Substances whose use in products is prohibited by laws and regulations     Substances whose use in products will be prohibited by laws and     regulations within one year     Substances whose use in products is prohibited within Panasonic		
Substances	Level 2	Substances whose use in products will be prohibited by treaties or on and after a specified date     Substances whose use in products is voluntarily restricted by Pana		
Managed substances		<ul> <li>Substances whose actual use status must be further researched and whose impact on health and safety as well as appropriate treatment must be considered</li> <li>Substances whose use or non-use and the amount of use must be further researched</li> </ul>		

#### List of managed substances (and the governing laws and regulations)

(Japan)	Chemical substances specified as Class I Specified Chemical Substances under the Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc.				
(Japan)	Substances the manufacture of which is prohibited under the Industrial				
	Safety and Health Act				
(Japan)	Poisonous substances specified under the Poisonous and Deleterious				
	Substances Control Law				
(EU)	RoHS and ELV Directives				
(EU)	CLP Regulation Annex VI, CMR-Cat. 1,2				
(EU)	Substances restricted under the REACH Regulation (Annex XVII)				
(EU)	Substances of very high concern (SVHC) under the REACH regulation				
(EU)	Substances that meet the criteria for PBT, vPvB, POPs under the				
	European Chemical Substances Information System				
(Industry	(Industry) Joint Industry Guideline JIG-101 A: Level B substances				
(Industry	<ul> <li>Global Automotive Declarable Substances List (GADSL)</li> </ul>				

### List of prohibited substance groups

Polychlorinated biphenyls (PCBs)	Cadmium and its compounds
Asbestos	Lead and its compounds
Specified organic tin compounds	Hexavalent chromium compounds
Short-chained chlorinated paraffin (C10-13)	Mercury and its compounds
Specified brominated flame retardants	Ozone-depleting substances (excluding
(PBB and PBDE)	HCFC)
Azo dyes and pigments forming specified	Formaldehyde
amines	Specified benzotriazole
Polychloronaphthalene	Perfluorooctane sulfonic acid and its salts
(number of chlorine is three or more)	Dimetylfumarate

Level 2

Polyvinyl chloride (PVC) and its compounds, vinyl chloride copolymer Dibutyltin (DBT) compounds, and dioctyltin (DOT) compounds

Panasonic's initiatives to reduce chemical substances with environmental impact



#### Identifying chemical substances in products

#### Participating in cross-industrial initiatives

We manufacture electrical and electronic products in a long supply chain, which comprises manufacturers of raw materials, structural components, and parts. To contribute to the achievement of the global goals set at the WSSD, it is important for us to disclose and communicate information about the chemical substances used in our products across the supply chain, for which we must promote cross-industrial initiatives to establish and disseminate an effective system. Panasonic is a member of the Joint Article Management Promotion Consortium (JAMP) together with about 350 major companies from various industries, such as chemical, component, and equipment manufacturers. We are proactively formulating, utilizing, and disseminating chemical substance management standards and systems through this organization.

- ► JAMP http://www.jamp-info.com/english/
- Identifying chemical substances in products by cooperating with suppliers

We have been utilizing our chemical substance management system called "GP-Web" since fiscal 2005. Through GP-Web, component and parts manufacturers have been providing information about the use of chemical substances in their products supplied to Panasonic. In July 2009, in order to ensure efficient actions to the REACH regulation, we revised the system referring to proposals made at the JAMP and started information communication based on common standards, such as communication formats across the supply chain, including upstream materials manufacturers and our customers.

In addition, we have opened an e-learning system in Japanese, English, and Chinese on the management of chemical substances for the purpose of efficiently requesting upstream suppliers, including both those who directly deal with us and those who do not, to provide us with necessary information. We now have about 10,000 registered users of this system. Users will learn Panasonic's ideas on chemical management and how we communicate the information about the use of chemical substances in our products through JAMP's system. Also, we offered a part of the e-learning content to JAMP, which uses it in its e-learning sessions for members. In this way we contribute to awareness-raising activities across the industry.

There have been some cases where information on composition and substance changes in the paints and reactive materials being used was not appropriately managed. In response to this issue, we will provide more advice to our supply chain members about the management of chemical information and also further spread the use of chemical substance management systems.

### Assessing the environmental impact of chemical substances

In order to develop products with low environmental impact, it is essential to scientifically understand the impact that chemical substances used in products might have on human health and the environment. To this end, Panasonic began measuring chemical substances released into the environment from home appliances to assess their environmental impact, in cooperation with the Itsubo LCA Laboratory, Tokyo City University. In fiscal 2009 we collected basic data required for this assessment and in fiscal 2010 we actually assessed the environmental impacts of flame retardants and plasticizers.

As part of measures to prepare information for the safe use of products in which substances of high concern are contained above specified levels, which is required under the REACH regulation, we have created a safety assessment document regarding the phthalates contained in polyvinyl chloride resin coating on power cables. The amount of phthalates eluted from the cables is limited and we determined that this will have minimal impact on human health. http://panasonic.net/eco/products/chemical\_substance/reach.html

#### Environmental assessment of chemical substances used in products



#### Reducing and partially discontinuing the use of PVC resin

With regard to polyvinyl chloride (PVC) resin, there are concerns about the generation of hazardous substances through the inappropriate disposal of waste resin and the harmful effects of an additive (phthalate ester) used to soften the resin. Panasonic has decided to discontinue the use of PVC resin in the internal wirings of its products to be newly released in Japan from April 2009, and on a global basis from April 2011, in consideration of the difficulty of sorting PVC resin from end-of-life products.

For the relevant products newly released in Japan in and after fiscal 2010, we replaced the PVC resin used in their internal wiring with a substitute as far as this was technically possible (177 models), except for air conditioners, for which it was determined that the replacement would cause quality problems.

Replacement of PVC resin used in the internal wiring of products newly released in Japan

Exempted due to technological problems (regarding mechanical strength against vibration in the case of washing machines and cleaners and bending property and other quality criteria) (54%) Replaced in and before fiscal 2009 (41%) Replaced in fiscal 2010 (5%)

# 'eco ideas' for Business-styles

We will create and pursue a business-style which makes the best use of resources and energy.

Panasonic has been upholding the goal of reducing total CO<sub>2</sub> emissions from its production activities by 0.3 million tons on a global scale by implementing relevant measures under its three-year mid-term management plan. In fiscal 2010 we reduced the emissions by 0.33 million tons through drastic reduction measures and were thereby able to reduce the emissions by 0.84 million tons in total over the three years, far exceeding the target.

In and after fiscal 2011, we will expand our company-wide CO<sub>2</sub> emission reduction activities to our nonmanufacturing divisions, such as research laboratories and offices and also to the logistics divisions. We will foster activities focusing not only on CO<sub>2</sub> reduction but also on the recycling of resources, in order to achieve a business style that will enable us to reduce environmental impacts in all our manufacturing processes while at the same time achieving higher productivity.





Onsite checking during an energy conservation diagnosis



Note: CO<sub>2</sub> emission factor (for electricity in Japan): 0.425 kg CO<sub>2</sub>/kWh for fiscal 2007, and 0.410 kg CO<sub>2</sub>/kWh for fiscal 2008 onwards, due to the time lag between the announcement of the values and the formulation of the plan by Panasonic. CO<sub>2</sub> emissions in fiscal 2007 would be 3.93 million tons if calculated based on the factor of 0.41 kg CO<sub>2</sub>/kWh. Of the reduction achieved by the measures implemented in fiscal 2008 (0.29 million tons), the improvement in the emission factor accounted for 0.05 million tons. \* Estimated value compared to that without measures; including reduction effect from integration/closure of manufacturing bases.

Training for practical energy conservation

### Initiatives for Green Factories

### Vision for Green Factories (GFs)

Panasonic is committed to minimizing both its input and emissions, mainly by taking anti-global warming measures, reducing waste including revenue-generating waste and reducing the release and transfer of chemical substances. We are determined to make an environmental contribution and at the same time enhance our management structure, towards transforming all our factories into Green Factories.

### **GF** Accreditation System

Panasonic introduced the GF Accreditation System to evaluate measures implemented by its factories and certify those that have earned certain scores as GFs. Specifically, the factories' achievements are graded using numerical points in terms of the three mandatory performance targets (prevention of global warming, reduction of total waste generation, and reduction of the release and transfer of chemical substances), as well as in terms of a voluntary target of effective utilization of water.

Under this system, which was introduced in fiscal 2006, a total of 238 factories were accredited as GFs globally in fiscal 2010, with the GF accreditation rate reaching 94%, far exceeding the target of 82%. Also, we globally accredit factories that have implemented top-class environmental activities in each country and received the highest-level commendations from the national government as Superior GFs, in recognition of their outstanding environmental activities. In fiscal 2010, we accredited 13 factories as Superior GFs.

#### Major evaluation items and indicators for GF accreditation

Items		Indicators	Definition
	Prevention of global warming	Amount of total CO <sub>2</sub> emissions	Amount of total CO <sub>2</sub> emissions
		Total waste	Amount of waste generation reduced in current fiscal year
	Reduction of total waste generation	rate	Amount of waste generation in previous fiscal year
Mandatory		Recycling rate	Amount of resources recycled
			Amount of resources recycled+ Amount of final disposal
	Reduction of chemical substances release/ transfer	Reduction rate of release/ transfer of Key Reduction- Target Substances*	Amount of released/transferred amount of Key Reduction-Target Substances in current fiscal year
			Amount of released/transferred amount of Key Reduction-Target Substances in a base year
	Effective	Reduction	Amount of water consumption reduced in current fiscal year
voluntary	of water	consumption	Amount of water consumption in previous fiscal year

\* See Definition of Key Reduction-Target Substances (368 substances) (page 21).

### **GF Assessment System**

In fiscal 2011, in light of the fact that the target of "90% or higher GF accreditation rate" was achieved for two years in a row, we upgraded the GF Accreditation System to the GF Assessment System, aiming to further improve the standard of measures implemented at all our factories.

Under the system, the factories evaluate themselves with regards to 15 environmental activity items classified into five groups on a one-to-five scale, thereby identifying their own progress and comparing it with that of other factories. We will make efforts to score at least "four" on average across the entire Group by fiscal 2013.

#### Indicators for GF assessment system



### GF competition in China

In China and Northeast Asia, we have been conducting an annual GF competition since fiscal 2008. This competition is designed to improve the average standards of the environmental measures of our factories in the region by appreciating excellent GF activities and sharing relevant information internally. In the four fields of CO<sub>2</sub>, waste, chemical substances, and water, excellent activities are commended in the competition and are included in a collection of GF competition examples. Details are distributed to all our factories in China to help employees share relevant know-how and information.

GF competitions held in China

		FY2008	FY2009	FY2010	
Number of applications		134 179		168	
Reductions shown in the applications	CO <sub>2</sub>	21,000 tons	20,000 tons	24,000 tons	
	Waste	17,000 tons	1,200 tons	7,700 tons	
	Chemical substances	200 tons	50 tons	130 tons	
	Water	1.24 million tons	210,000 tons	200,000 tons	

The examples are distributed to all factories in China.

### Energy Conservation and Global Warming Prevention at Factories

### Making a concerted effort for higher energy efficiency

In its medium-term management plan, Panasonic set out the target of reducing its global CO<sub>2</sub> emissions by 300,000 tons (equivalent to about 7.5% of total) from the fiscal 2007 level in fiscal 2010 and has been striving to attain this target.

Specifically, we established the Corporate CO<sub>2</sub> Emissions Reduction Promoting Committee, which manages progress toward the achievement of the target on a monthly basis. Through this committee, we are promoting the following measures: (1) visualization of energy consumption by promoting the METAGEJI\* initiative; (2) energy conservation diagnoses by an expert team; (3) innovation of production processes; and (4) group-wide sharing of reduction examples.

We achieved the target one year earlier than planned in fiscal 2009, and in fiscal 2010 we set a higher target and accelerated the measures to further enhance our energy conservation system.

\* Visualizing energy consumption and implementing measurable reduction initiatives by introducing measurement instruments such as meters and gauges

### Establishment of the Corporate CO<sub>2</sub> Emissions Reduction Promoting Committee

We established the Corporate CO2 Emissions Reduction Promoting Committee, which is chaired by the Director responsible for the environment, and comprises the Directors in charge of manufacturing at business domain companies. This committee checks the monthly progress made in the reduction of CO<sub>2</sub> emissions, examines related problems, and ensures the implementation of necessary measures. In addition, each business domain company has a similar committee to share information promptly among their factories across the world and implement the necessary measures. We also established the Energy Conservation Technical Support Team under the committee to support common issues in each factory.Moreover in April 2010, we launched the Corporate CO<sub>2</sub> Emissions Reduction Contribution Committee, which includes members also from product, non-manufacturing, and logistics departments. As for CO<sub>2</sub> emissions reduction activities at our factories, the Working Group to Reduce CO2 Emissions from Manufacturing set under this committee will lead the activities.

### Using CO<sub>2</sub> emissions data as a core management indicator

Panasonic has been collecting environmental performance data from all of its global factories (274 bases) every month,

which consists of 23 items including CO<sub>2</sub> emissions. We have built and operated a system to tabulate and feed back the results of the data analysis on a monthly basis.

In fiscal 2009, we added "CO<sub>2</sub> emissions" to our core management indicators, which include net sales, operating profit, and inventory. We incorporate the results in the inhouse performance evaluation program, thereby further accelerating the measures.





<Basis for calculating Panasonic's CO2 emissions:

 The factors related to fuels are based on the Guideline for Calculation Greenhouse Gas Emissions (version 2.2) published by the Ministry of the Environment, Japan.

- The factors for electricity purchased in Japan (kg/kWh) are set at 0.376 for fiscal 2001, 0.425 for fiscal 2006 and 2007, and at 0.410 for fiscal 2008 onwards. The total CO<sub>2</sub> emissions are 3.93 million tons (fiscal 2007), 4.12 million tons (fiscal 2008), 3.34 million tons (fiscal 2009), and 3.02 tons (fiscal 2000) if the factors for electricity purchased in Japan are set at 0.410 (fiscal 2007), 0.453 (fiscal 2008), and 0.373 (fiscal 2009 and 2010) based on the actual results.
- The factors above are also used for electricity purchased by PPS (Power producer and supplier)
   The GHG protocol's CO<sub>2</sub> emissions factors for each country are used for electricity purchased outside Japan.
- \* CO<sub>2</sub> emission per basic unit = CO<sub>2</sub> emissions/(consolidated sales/Bank of Japan's corporate goods price index [electrical machinery and equipment])

### CO2 emissions by region



### CO<sub>2</sub> emissions reduction measures

### (1) Promoting the METAGEJI initiative across all the manufacturing sites in the world

In order to ensure the reduction of CO<sub>2</sub> emissions at factories, it is important to visualize the energy consumed by each facility and the effect of each reduction measure.

We have introduced about 40,000 measurement systems to all of our global manufacturing sites, and built a management system as well as created a manual for

the better use of meters and gauges based on the results of the measures implemented at a model factory. In the future, we will further identify the waste of energy and enhance measures to reduce such waste at our factories by utilizing these systems.



Measurement equipment

### (2) Identifying necessary measures through energy conservation diagnoses

In order to help each of our manufacturing sites to identify the necessary energy conservation measures, we are promoting energy conservation diagnoses undertaken by internal experts. At our business domain companies, managers and skilled engineers who have expertise in manufacturing processes collaborate together to resolve problems. Further, we have an expert team to provide technical support to our factories and this team is conducting diagnosis activities to search for themes that can be applied group-wide. In fiscal 2010, the team

made 350 proposals at 18 factories for the reduction of CO<sub>2</sub> emissions by a total of 20,000 tons, and the factories have then implemented measures to achieve the target.



Onsite inspection during the energy conservation diagnosis

### (3) Accelerating CO<sub>2</sub> emissions reduction through production process innovation

To achieve the CO<sub>2</sub> reduction targets, we are aggressively pursuing energy conservation themes that were beyond the reach of conventional methodologies due to technology and quality assurance-related problems. Specifically, an in-house research division, Corporate Manufacturing Innovation Division, is developing energy conservation technologies making full use of simulation technology, to support business domain companies in production engineering aspects.

These efforts have resulted in a substantial reduction of CO<sub>2</sub> emissions in the clean rooms of our semiconductor factories and in the supply of dry air in secondary battery

production processes, both of which consume a great amount of energy. We also hold Energy Conservation Production Engineering Study meetings to enable our factories to share their problems, and seek acceleration of corporate-wide initiatives including training engineers.



Studying from competitors/advanced sites at the Energy Conservation Production Engineering Study meeting

### (4) Sharing CO<sub>2</sub> reduction examples and promotion of training experts

In September 2008, we created a free keyword research system on the intranet with a database of CO<sub>2</sub> reduction examples, known as the BA Chart.\* A total of 1,139 examples are registered in the database (as of March 2010) and we are now promoting its use across the company. Moreover, we summarized the energy conservation measures (33 items) to be taken by all factories in a checklist, on which they are now conducting overall review.

For the promotion of this initiative, it is critical to train engineers versed in energy conservation technologies. Accordingly Panasonic has held 18 training seminars on CO<sub>2</sub> reduction worldwide, as well as 12 technical briefings

since fiscal 2008, developing a total of 340 experts. \*BA Chart: Chart that provides a comparison between before and after the implementation of CO<sub>2</sub> reduction measures.



Training seminar in China

### Reducing the emissions of greenhouse gases other than CO<sub>2</sub> from energy use

In addition to  $CO_2$ , Panasonic emits PFCs, SF<sub>6</sub>, and other greenhouse gases, which are mainly used as etching and cleaning gases at its semiconductor factories. In order to reduce the emissions of these gases, our semiconductor factories have been implementing measures including substituting such gases with those having lower environmental impact and installing greenhouse gas removal devices to recover the generated gases and render them harmless.

While the World Semiconductor Council aims to reduce greenhouse gas emissions by at least 10% from the 1995 level by 2010, Panasonic's semiconductor department has achieved a 53% reduction from the fiscal 1995 level in fiscal 2010.

#### Composition of GHG emissions (tons-CO<sub>2</sub>)



### Promoting factory energy conservation CDM\*

Panasonic has been implementing an energy conservation project at its factories in Malaysia since fiscal 2005, which was approved as a CDM project by the United Nations in March 2007, becoming the first CDM project to be implemented by a Japanese company for energy conservation. We are now further promoting this project. \*Clean Development Mechanism: A method authorized by the Kyoto Protocol, whereby industrialized countries undertake initiatives to reduce GHG emissions through rendering financial and technical assistance to developing countries.

# Management of Chemical Substances at Factories

### Ensuring appropriate management based on the Chemical Substances Management Rank Guidelines

Panasonic's management of chemical substances at factories started with the Chemical Substances Management Rank Guidelines (for Factories) published in 1999, with a view to minimizing the adverse effect on local residents and ecosystems in neighbors of our factories and to improve the safety and health of employees working there. In fiscal 2010, we published Version 4 of these guidelines, in consideration of the laws and regulations on chemical substances enforced in major countries and the hazardousness of the substances concerned. The new version will be used at all of our sites across the world in fiscal 2011.

In the new version, the chemical substances to be managed are classified into the "prohibition" rank which prohibits the use of the substance or the "reduction" rank which refers to reducing the amount released/transferred, based on their impact on human health and the environment and carcinogenic risks. The hazardousness of these substances are also classified into five levels according to the degree of their impact on human health and the environment, which ensures that priority will be given to reducing the use of more hazardous substances.

#### Chemical Substances Management Rank Guidelines Version 4 (for Factories)

Rank	Definition	Number of Substances
Prohibition	Prohibiting use	763
Reduction	Reducing the amount released/transferred	4,181

### Reduction initiatives centering on Key Reduction-Target Substances

In fiscal 2007, from among the substances covered by the Guidelines, we selected 368 substances that have a substantial impact on the environment (substances that: have a large amount of release/transfer, cause air pollution, and/or global warming) as Key Reduction-Target Substances. We then promoted the reduction of these substances to achieve our global target of reducing their release/transfer by 10% from the fiscal 2006 levels by fiscal 2011. By setting and implementing a three-year chemical substance reduction plan at each of our sites, we were able to achieve a 27.8% reduction in fiscal 2009, attaining the target for fiscal 2011 earlier than planned. In fiscal 2010, we achieved a 43.2% reduction of release/transfer of Key Reduction-Target Substances by further introducing decontamination and deodorization equipment, increasing production yields, and reducing the use of solvents through process improvement.

We also appropriately manage substances other than the Key Reduction Target-Substances in line with the Guidelines. Since fiscal 2011 is the base year for the next reduction measures to be taken, we will further reduce the release and transfer of these substances as well as ensure collection of accurate data concerning the substances covered by the Guidelines Version 4.

### Reducing the use of volatile organic compounds

For volatile organic compounds (VOCs), which are released and transferred in particularly large quantities among the Key Reduction Target-Substances, we are reducing the release and transfer by measures such as improving the burning efficiency of decontamination equipment, reviewing manufacturing processes, reducing the use of solvents, promoting inkless printing, using low-VOC / non-solvent materials, and reusing waste liquids.

#### Definition of Key Reduction-Target Substances (368 substances)

- (1) Ten groups of substances recording the highest levels of release/transfer in the Pollutant Release and Transfer Register survey (Japan, fiscal 2003) Ten groups of substances recording the highest levels of release/transfer in the chemical substance survey (fiscal 2005) by Panasonic
- (2) Twenty groups of VOCs recording the highest levels of release in a survey by the electrical and electronics industry

(3) Five groups of substances specified by the Japanese Law Concerning the Promotion of the Measures to Cope with Global Warming







#### Material balance of substances in the Management Rank\*1

- \*1 Based on the Panasonic Chemical Substances Management Rank Guidelines (Version 3.1) and covering all substances listed in the Japanese PRTR Law.
- \*2 The amount of substances converted into other substances through neutralization, decomposition, or other chemical treatment within the factory.
- "3 The amount of substances recycled with revenue, as well as those recycled free of charge or with any payment.
- \*4 The amount of substances that have been changed to other substances as a result of chemical reactions, and/or those that are contained in or accompanied with products and shipped out of factories.
- \*5 Includes substances transferred as waste, as well as those discharged into the sewage system. Recycled amount which is free of charge or accompanies treatment cost under the Waste Management Law is included in "Recycled." (Different from the transferred amount reported under the PRTR Law.)

### Waste Reduction at Factories

### Globally reducing the amount of waste, including revenue-generating waste

Waste generated from Panasonic's factories are classified into: (1) recyclable waste (including those that can be sold and those that are transferred free of charge or by paying a fee); (2) waste that can be reduced by incineration or dehydration; and (3) final disposal (waste that has no other option but to be sent to landfills).

We will reduce the generation of all the aforementioned types of waste, including revenue-generating waste, and also reduce the wastes generated per unit of sales<sup>\*1</sup> by 16% from the fiscal 2001 level in fiscal 2011. Moreover, we are committed to reducing the amount sent to landfills to close to zero. Specifically, we are making concerted efforts to achieve a 99.5% and a 95% recycling rate inside and outside Japan, respectively, toward "zero waste emissions."<sup>\*2</sup>

- \*1 Amount of waste, including revenue-generating waste/consolidated net sales (without price adjustment)
- \*2 Panasonic's definition: Recycling rate of 99% or higher Recycling rate = Amount of resources recycled/(amount of resources recycled + amount sent to landfills)

### Zero waste emissions through the minimization of the mass of final disposal

In fiscal 2010, we reduced the wastes generated per unit of sales by 7% against a target of 14% from the fiscal 2001 level, and reduced total waste generation by 4% from the previous fiscal year level.

The recycling rate reached 99.9% and 93.0% inside and outside Japan, respectively, against the fiscal 2010 targets of 99.5% and 92.5%. In fiscal 2008, all 138 sites in Japan\* achieved zero waste emissions, and all 131 sites in the country achieved a recycling rate above 99.5% in fiscal 2010 as well.

\*All sites under our business domain companies

#### Amount of total wastes including revenue-generating waste and amount of total wastes per unit of sales









Breakdown of amount of wastes by region



#### Breakdown of amount of wastes by category

Items	Total wastes	Recycled	Final disposal
Metal scrap	148,525	148,127	311
Paper scrap	55,496	54,262	457
Plastics	49,432	42,842	1,919
Acids	49,856	43,636	21
Sludge	25,781	22,352	1,692
Wood	19,816	19,606	177
Glass/ceramics	16,006	15,306	675
Oil	13,511	10,893	216
Alkalis	7,074	4,836	9
Others	25,526	15,118	8,956
Total	411,023	376,978	14,434

(unit: tons)

### **Effective Use of Water Resources at Factories**

### Strengthening measures in China to reduce water consumption

Panasonic is globally committed to reducing its water consumption per unit of sales\* by 24% from the fiscal 2001 level by fiscal 2011, in response to serious water shortages across the world. In fiscal 2010, we reduced our water consumption per unit of sales by 17% against a target of 22% from the fiscal 2001 level and total use by 6% from the fiscal 2009 level.

In particular, China is facing serious water shortages, and we have added the effective use of water resources to the criteria of our GF Accreditation System, thereby steadily curtailing water consumption at all our factories in the country. As a result, we achieved an 18% reduction as compared to a global reduction of 6% in fiscal 2010 (compared with the fiscal 2009 level). We will continue to reduce our water use in each region, giving careful consideration to local characteristics.

\* Water consumption/consolidated sales (without price adjustment)

#### Amount of water consumption per unit of sales



Breakdown of water consumption by region				n
	Municipal			

Region	Municipal water/ industrial water	Rivers/ lakes	Groundwater	Consumed	Emitted
Japan	1,147	17	2,462	3,626	3,157
Americas	24	0	47	71	34
Europe	11	0	22	33	32
Asia/Oceania	464	0	45	509	351
China/Northeast Asia	664	0	11	675	461
Total	2,310	17	2,587	4,914	4,035

(10.000 m<sup>3</sup>)

# Measures against Soil and Groundwater Contamination

### Taking remedial measures and preventing the spread of contamination

In the latter half of the 1980s, soil and groundwater contamination due to chlorinated organic solvents was detected at some of Panasonic's sites. In response, we have conducted anti-contamination activities across the company. Specifically in 1991 we created the Manual for Preventing Contamination of Soil and Groundwater and began conducting necessary surveys and measures. In 1995 we discontinued the use of chlorinated organic solvents, and in 1999 created Guidelines on the Prevention of Environmental Pollution to ensure there would be no recurrence of similar problems at our sites.

Furthermore, in fiscal 2003 we began enhancing our surveys and measures to comply with relevant laws and regulations, including the Soil Contamination Countermeasures Act, which was enforced in Japan in 2003, and in fiscal 2004 started implementing measures to place all our bases across the globe under Panasonic's management supervision with regard to soil and groundwater.

Specifically, we conduct onsite inspections and interviews at the bases, in addition to surveying their use of VOCs and heavy metals. Furthermore, we implement surface soil surveys within the premises. For the sites where contamination was detected beyond the regulatory pollution standards, we conduct detailed borehole surveys to identify the boundaries of the contaminated areas and take remedial measures.

As a result of these efforts, we were able to place all our manufacturing and non-manufacturing sites in Japan under Panasonic's management supervision with regard to this issue in fiscal 2004, and also those outside Japan in fiscal 2006. Subsequently, Panasonic Electric Works and PanaHome joined our Group and in fiscal 2009 we again placed all our bases under management supervision.

#### Soil and Groundwater Risk Management Policy

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measures
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Soil and groundwater pollution surveys and remedial measures

	Number of sites targeted for investigation	Number of sites completing remedial measures	Number of sites currently taking remedial measures
Japan	195	49	44
Outside Japan	172	4	6
Total	367	53	50

### **Compliance Management** at Factories

### Legal compliance based on the environmental management system

Panasonic ensures legal compliance at its factories as a prerequisite for its operations, and regularly measures the level of environmental impact, including gas emissions, water discharge, noise, and odor levels at factories. For cases that could have resulted in a serious violation of the laws, we share relevant information across all our manufacturing sites to prevent the recurrence of similar problems. In fiscal 2010, there was one case of legal violation each inside and outside Japan. In response, we made the necessary notifications to local governments and implemented countermeasures. We will continue to ensure legal compliance by implementing preventive measures.

Cases of violation (	exceedance of I	legal standard	level,etc)
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Region	Air	Water quality	Noise	Odor	Waste	Total
Japan	0	0	1	0	0	1
Outside Japan	0	0	0	0	1	1
Total	0	0	1	0	1	2

### **Initiatives for PCB Pollution**

### Facilitating the proper management of PCB waste and prompt full-scale measures for soil remediation

Panasonic discontinued the production of equipment containing polychlorinated biphenyls (PCBs) in Japan in 1972 and has since been strictly managing its PCB waste. We are storing and making necessary notifications about such materials in compliance with the Act on Special Measures concerning Promotion of Proper Treatment of PCB Waste, which was enforced in Japan in July 2001.

As for the PCB-containing capacitors buried at five of our factories, which we voluntarily made public in January 2003, we completed excavations at the end of March 2009. We also began full-scale treatment of the contaminated soil in September 2007 by commissioning it to Geosteam Corp., which has PCB contaminated soil purification facilities in Kitakyushu. By the end of March 2010, approx. 9,770 tons of contaminated soil were transported to and treated at the facilities. We will continue to treat PCB waste and contaminated soil in a prompt manner.

### Numbers of PCB-containing items registered with JESCO\* and those already decontaminated (as of March 31, 2010)

Type of waste	Registered with JESCO	Already decontaminated
Transformers, capacitors, etc.	2,023 devices	979 devices
PCB and PCB-containing oil	About 4,700 kg	-
* Japan Environmental Safety Corporation	(company opgaged in PC	2 wasto troatmont)

#### Japan Environmental Safety Corporation (company engaged in PCB waste treatment).

# **Energy Conservation in Offices**

### CO2 emissions reduction at non-manufacturing sites

Along with the acceleration of CO<sub>2</sub> emissions reduction at its manufacturing sites, Panasonic also began strengthening its CO<sub>2</sub> reduction measures at its non-manufacturing sites in fiscal 2009. Specifically, we set a total CO<sub>2</sub> emissions reduction target for our self-owned office buildings in Japan, set a three-year reduction plan for about 60 of these buildings, and implemented measures for the visualization of energy use and reduction of waste through 'energy conservation tuning.' As a result, we reduced our CO<sub>2</sub> emissions by about 11% from the fiscal 2008 level at our non-manufacturing sites in Japan and achieved our target of reducing such emissions by 2% or more on an annual average.





(Note) Scope of the data: Non-manufacturing sites with 100 or more employees as of fiscal 2008. CO<sub>2</sub> emission coefficient for electricity purchased: 0.410 kg CO<sub>2</sub> /kWh

### **Initiatives for Green IT**

Panasonic has been promoting Green IT initiatives to reduce CO<sub>2</sub> emissions through the use of IT technologies. To be specific, the initiatives are classified into (1) Green of IT (making IT devices more energy-efficient and improving its operations); (2) Green by IT (making the entire society more energy-efficient by the use of IT); and (3) Green Data Center (making the data center more energy-efficient).

In fiscal 2010, we reduced our CO<sub>2</sub> emissions by 1,243 tons from the fiscal 2009 level in Green of IT through the stricter management of PC power sources, including reductions in the use of power for IT devices in standby mode; by 325 tons in Green by IT through the steady use of e-Work, which enables employees to participate in conferences from remote areas and work during business trips and at home; and by 1,317 tons in Green Data Center through a consolidation of servers. As a result, we achieved a 36% reduction, exceeding the initial target of 33% from the fiscal 2007 level. In fiscal 2011, we will utilize our HD image communication system for teleconferencing and will innovate working styles at our sites for further CO<sub>2</sub> emissions reduction.

#### Activity details and results in fiscal 2010

Activity	Details	CO <sub>2</sub> emissions reduction in fiscal 2010
Green of IT	Stricter management of PC power sources     Reducing the standby power used by IT devices	1,243 tons
Green by IT	<ul> <li>Promoting working at home, Internet-based meetings, and HD image communication system</li> </ul>	325 tons
Green Data Center	Consolidating/integrating servers	1,317 tons

### Recycling

### **Used Product Recycling**

### Basic approach to product recycling

Aiming at the effective use of natural resources and prevention of environmental pollution, a growing number of recycling laws have been enacted in various countries throughout the world. Examples include the Home Appliances Recycling Law and the Law for the Promotion of Effective Resources in Japan, the WEEE Directive in the EU, and recycling laws in many states in the USA. In China as well, a similar law will take effect from January 2011. In addition to complying with recycling laws in each country, Panasonic attempts to go further: We endeavor to play an active role in creating the most efficient recycling system in each country in view of its local recycling infrastructure. Panasonic also strives to improve the sustainability of the global environment through resource recycling initiatives designed to use the earth's limited resources more effectively.

### Global promotion product recycling

#### Japan

In response to the Home Appliances Recycling Law of 2001 which covers four specified kinds of home appliances, Panasonic developed a geographically dispersed recycling network through the effective use of existing recycling facilities nationwide. Ecology Net Co., Ltd., established through Panasonic's leadership, manages all aspects of the recycling-related services for this network, including supervising 190 designated collection sites and 36 recycling facilities, on behalf of the "Group A" manufacturers (24 companies including Panasonic). Since April 2009, we have also been handling covered products newly added to the law (flat-screen TVs and clothes dryers). In fiscal 2010,

Panasonic recycled about 104,000 tons for the four specified home appliances.\*1



\*1 Air conditioners, TVs, refrigerators/freezers, and washing machines/clothes dryers.

#### Europe

Disassembling flat-screen TVs

Prior to the enforcement of the WEEE Directive in Europe in August 2005, we established a recycling management company, ENE EcologyNet Europe GmbH, in Germany in April of the same year. In cooperation with established recycling companies, we have built up a high-quality recycling system based in Germany. In 2009, we collected about 56,000 tons<sup>\*2</sup> of used products covered by the WEEE Directive.

\*2 Calculated by multiplying sum of weight of collected products through the collection system by Panasonic market share (in collection system) of product weight put on the market.

#### United States

Following the start-up of the state recycling law in Minnesota in July 2007, Panasonic established Electronic Manufacturers Recycling Management Company, LLC (MRM), jointly with Toshiba Corp. and Sharp Corp. in September of the same year, and began recycling TVs, PCs, and other products. Subsequently we also launched recycling operations in other states where similar laws were enacted, and in November 2008 began implementing voluntary recycling programs across the country through MRM.

In recognition of these activities, MRM was chosen as the winner of the 2009 TV Recycling Challenge Award by the US Environmental Protection Agency. Panasonic collected about 3,700 tons<sup>\*3</sup> of waste electronic devices in 2009.

\*3 Total amount collected based on both state mandates and through voluntary efforts in other states.

#### China

Looking toward the effective date of the recycling law in January 2011, Panasonic, as a member of the Executive Committee of Foreign Investment Companies, has been proactively cooperating with the Chinese government in establishing the necessary collection and recycling systems.

### India

In March 2010, Panasonic started a voluntary take-back program for TVs in Chennai. The program is scheduled to be expanded to wider geographical areas.

### Technological development for recycling

Panasonic has undertaken a number of initiatives aimed at recycling-oriented manufacturing, which we believe is the basis for a more effective use of our limited resources.

Panasonic Eco Technology Center (PETEC), which recycles the four specified home appliances in Japan, is engaged in research to improve the recycling processes, achieving a more efficient recovery and increased supply of resources. For example, TV CRT recovery requires the separation of the tube into the front and rear glass parts. By using laser radiation, processing time was reduced to one third, compared with the conventional thermal strain-hot wire separation method. High-level, smooth separation was achieved by precise laser radiation based on an auto-detect function for CRT size. Moreover, PETEC has developed and introduced an integrated system to recover iron, aluminum, copper, and resin from shredded refrigerators, and is also undertaking technological development for sorting of the recovered resins and of volume reduction equipment for resins that cannot be further sorted. At the same time, Panasonic is proactively developing applications for recycled resources inside and outside the company. For example, we developed interlocking paving blocks containing used CRT glass jointly with a specialized manufacturer. Panasonic is using the product inside the company and will work to gradually spread its use in the marketplace.

Through these efforts, Panasonic will further contribute to the achievement of a sustainable society.



Laser cutter for CRT

Interlocking paving blocks

### Logistics

### **Green Logistics**

### Reducing CO<sub>2</sub> emissions in logistics

In order to promote Green Logistics on a global scale, Panasonic has set the target of reducing its CO<sub>2</sub> emissions per basic unit\* by at least 1% year-on-year for both international and domestic transportation.

In fiscal 2010, our global CO2 emissions from logistics activities came to 0.78 million tons, of which international transportation accounted for 46% and domestic transportation 20%. Regarding CO<sub>2</sub> emissions in Japan, 97.1% resulted from transportation by truck. The global CO2 emissions per basic unit from international and domestic transportation decreased by 13.7% from the fiscal 2009 level, due to modal shift activities from decrease of air transportation. In fiscal 2011, we will conduct our Green Logistics activities in cooperation with foreign countries to achieve and share more results on a global scale. \* CO2 emissions/transportation weight



#### Major initiatives taken for Green Logistics



Joint transportation with TOMY Company. Ltd. using a nextgeneration low-emission CNG truck for long-distance transportation

### Modal shift

The amount of Panasonic's domestic railroad freight transportation in fiscal 2010 totaled 15,479 five-ton containers. As a result of joint transportation with companies in other industries using four proprietary containers and round-trip transportation in cooperation with freight carriers, we achieved much improved results over the previous fiscal year and reduced CO<sub>2</sub> emissions by 8,476 tons. Thanks to modal shift from truck to railroad for the shipment of our LCD TV, "VIERA," from the Utsunomiya Plant, we became the first company in the industry to be approved to use the "Eco Rail Mark" for flat-screen TVs. This modal shift also contributed to a reduction in CO<sub>2</sub> emissions.

In China, we began transporting motors for home electric appliances by rail over 1,500 km from Guangzhou to Hangzhou, thereby reducing CO<sub>2</sub> emissions by 280 tons annually. We were able to shorten the lead time-which is longer than transportation by truck—by reducing the waiting, loading, and unloading times through using our own dedicated wagons.

### Use of biodiesel fuel (Japan)

Panasonic is using biodiesel fuel made from waste cooking oil for vehicles used in its production, procurement, and marketing activities. In fiscal 2010, we increased the use of biodiesel fuel to 100% in the Tokai and Tokyo metropolitan areas and started using it for joint transportation with other companies. The use of biodiesel fuel helps us reduce our CO2 emissions and save costs in conjunction with roundtrip transportation.

### Strengthening cooperation with transportation partners

In fiscal 2010, we have started our ECO VC\*1 activity to contribute to product strength by reducing our environmental impact and saving costs with our transportation partners. We commend our transportation partners who have made great contributions for us in Green Logistics and share the results at the Panasonic Excellent Partners' Meeting.

At the first meeting held in fiscal 2010, we commended Ecotruck Co., Ltd. in recognition of its contribution to our SCM. The company introduced Japan's first large CNG\*2 vehicle for long-distance transportation and promoted joint transportation between Panasonic and companies in other industries, thereby helping Panasonic reduce both its CO<sub>2</sub> emissions and the cost of transportation.

In fiscal 2011, we will expand ECC/VC activities to regions outside Japan.

\*1 VC: Value Creation.

\*2 CNG: Compressed Natural Gas.

### **Environmental Solution Business**

### **Energy Conservation Support Service Business**

Panasonic has been making company-wide efforts to reduce CO<sub>2</sub> emissions as one of the key actions under its 'eco ideas' Strategy (see P.19). Energy conservation measures conducted so far provided us with a range of technologies and expertise, and we are flexibly utilizing this reservoir of knowledge throughout the company. To date, utilization of such experience, technologies, and expertise for energy conservation measures has been limited to within Panasonic. However, we came to realize the importance of widely sharing such knowledge with society, thus we commenced business to support energy conservation activities in third parties' production plants. 1) Provision of energy conservation organizational

- management and operational expertise
- 2) Provision of information concerning energy conservation, how to share know-how, and intra-company education methods
- 3) Provision of technologies and know-how to visualize energy usage utilizing the METAGEJI\* initiative
- Provision of innovative technologies in production processes
- Optimum design using exclusive simulation technologies and installation of air conditioning systems, furnaces, and factory ventilation piping
- Manufacturing process innovation
- 5) Provision of technologies to coordinate production and power facilities to supply power in a timely on-demand manner
- 6) Provision of energy-efficient equipment and systems

#### Procedure to provide energy conservation technologies and expertise

- (1) Energy conservation diagnosis and consultation to identify suitable energy conservation measures
- (2) Support to establish a plan to implement the required measures
- (3) Support for design, installation, and installation management
- (4) Support for measuring and verifying energy conservation effects
- (5) Support for maintenance and operation of facilities and systems
- (6) Financing the fund for the energy conservation measures

\* Visualizing energy consumption and implementing measurable reduction initiatives by introducing measurement instruments such as meters and gauges

#### Energy conservation visualization technologies



#### High precision energy conservation simulation technology







Sample furnace energy conservation simulation. Analyze and optimize to attain the most efficient heat processing

#### Coordinated control technology

Rendering of coordinated control of production and power facilities



#### **Total environmental solutions**

Panasonic has long been involved in the environmental measures support business in general, which is not only limited to energy conservation but also includes purification of water, air, and soil, and resource recycling. We will contribute in creating environmental value for our customers through providing our entire environmental measures service along with our energy conservation solutions as the "Total Environmental Package Solutions for Entire Factories."

### Conceptual rendering of Total Environmental Package Solutions for Entire Factories



### **Biodiversity Conservation**

### Initiatives to Conserve Biodiversity

### Approach to Biodiversity

Our society benefits from a multitude of nature's blessings grounded upon biodiversity, known as 'ecosystem services.' Sadly, however, over the last 50 years this biodiversity has been lost at an unprecedented pace, and corporations are required to take initiatives on biodiversity conservation and sustainable resource usage. With a full understanding of the importance of biodiversity and its critical situation, Panasonic is propelling its pro-biodiversity activities through the dual axes of business activities and social contribution.

### Start of the Biodiversity Project

In order to promote the biodiversity initiatives in business activities, Panasonic established the Biodiversity Project in October 2009 and concrete measures have been implemented in three important areas: procurement, usage of land, and products.

#### (1) Initiatives in procurement

In February 2010, Panasonic created the Panasonic Group Green Procurement Guidelines for Wood to conserve biodiversity and sustainable resource usage after thorough consultations with the World Wide Fund for Nature (WWF) Japan. The Guidelines divides various wood and wooden materials that may be procured into three categories: Priority procurement (Category 1), Acceptable procurement (Category 2), and Avoiding procurement (Category 3). The survey concerning Green Procurement targeted for procurement in fiscal 2010 revealed the total amount of wood and wooden materials to be approximately 440,000 m<sup>3</sup>. Out of these, those in Category 1 accounted for 47%, Category 2 51%, and Category 3 2%. We will further increase the proportion of Categories 1 and 2, while decreasing Category 3.

#### Green Procurement Guidelines Details



#### (2) Initiatives in usage of land

There are 121 Panasonic sites that have a green area inside their premises (in Japan, as of the end of December 2009), and the total of such green areas reaches nearly 2 million m<sup>2</sup>. Panasonic aims at contributing to the conservation of biodiversity in the areas where our business sites are located through reviewing the optimum conditions for these green areas and their management methods. A survey on Panasonic's business sites across Japan is currently underway. Based on the results of this survey, green areas to be managed with priority will be selected to become model cases.

#### (3) Biodiversity initiatives for products

Focusing on products that may have a direct impact on biodiversity, Panasonic receives third party assessments concerning such products in terms of their effects and dependency on biodiversity, their risk, and business opportunity level.

### Assessment of Mushi-Veil, an interior light with low insect-attracting features, by BirdLife Asia

Lighting equipment can disrupt the ecosystem of insects that are attracted to light, and this in turn will have an influence on other creatures that prey on such insects. Mushi-Veil attracts less insects (70% reduction compared to conventional lights) by blocking certain wavelengths, thus it can be valued as lighting equipment that contributes to biodiversity conservation.



### Partnership with the World Wide Fund for Nature (WWF)

Since 2007, Panasonic has been promoting the Yellow Sea Ecoregion Support Project over seven years in collaboration with WWF Japan. During a three-year period from January 2010, the Project aims to implement the measures required for the sustainable usage and conservation of the environment, designating the coastal areas of the Yalu River estuary in Liaoning Province, China, and Muan County in South Korea's South Jeolla Province as model areas.





Yalu River estuary. A resting point for thousands of bar-tailed godwits during their spring and autumn migrations ©Kango Nakao

Observation of coastal wetlands at Yalu River estuary, designated as a national nature reserve© WWF Japan

Also as one of the first corporate sponsors of the WWF International's Arctic Project since 2008, Panasonic has been supporting the Project's environmental surveys and analyses to maintain the arctic ecosystem, especially as represented by polar bears.



Panasonic presented this ice sculpture of a polar bear for a peripheral event of COP15



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### Asia

### 'eco ideas' Declaration in Asia Pacific

In June 2009, Panasonic announced 'eco ideas' Declaration for Asia Pacific region in Singapore with the objective of contributing to reducing environmental impacts and raising environmental awareness in the region, where Panasonic operates 48 manufacturing sites across seven countries.

Panasonic will promote its high environmentalperformance products and reduce CO<sub>2</sub> emissions from production activities in Asia Pacific, one of the most

important regions for Panasonic's manufacturing activities. We will also be actively involved in the environmental conservation activities with the local communities.



Declaration event in Singapore

#### Targets and fiscal 2010 results of 'eco ideas' Declaration in Asia Pacific

Category	Targets	Fiscal 2010 results
Products	Increase the sales ratio of eco products in the total sales figure to 80% by fiscal 2013	Increased to 49%
Manufacturing	<ol> <li>Reduce CO<sub>2</sub> emissions from production activities in Asia Pacific by 240,000 tons from fiscal 2007 level by fiscal 2010 (equivalent to 30%)</li> <li>Establish one 'eco ideas' Factory in Singapore, Malaysia, and Thailand in fiscal 2010</li> </ol>	<ol> <li>Reduced by 0.287 million tons</li> <li>Established in Singapore, Malaysia, and Thailand</li> </ol>
Global Citizenship Activity	Spread 'eco ideas' through strong partnerships with external stakeholders and awareness-raising programs especially for the youth	<ul> <li>Developed an environmental education program by collaborating with the Singapore government</li> <li>Hosted Eco Caravan exhibitions in Asian countries</li> </ul>

### Active introduction of products with industryleading environmental performance

In Asia Pacific region, Panasonic focuses on introducing products with high environmental performance in terms of energy efficiency, water efficiency, and long-lasting features.



Refrigerator

	-
's	Air Conditioner (CS-S12KKT)

class energy efficiency (Level 5 energy labeling in Thailand) by using a built-in inverter

### Established 'eco ideas' Factories in three countries

In October 2009, Panasonic Refrigeration Devices Singapore, which produces refrigeration compressors, Panasonic AVC Networks Kuala Lumpur Malaysia, a major TV manufacturing site, and Panasonic Home Appliances Thailand, which mainly manufactures washing machines, were all selected as 'eco ideas' Factories-model factories that embody our environmental strategy. Besides manufacturing eco products and reducing the environmental impact from production activities, these factories are also actively engaging in local community activities.

### Collaborating with Singapore's National **Environment Agency on environmental** education programs

Under a partnership with Singapore's National Environment Agency (NEA), Panasonic Asia Pacific hosts the Panasonic-NEA Environment Champions (Schools) Industry Module at one of its 'eco ideas' Factories in Asia, Panasonic Refrigeration Devices Singapore (PRDS).

This educational Module aims to groom young environment champions in Singapore by educating them on the environmental issues faced by the world and their countermeasures and also providing them an experiential program to learn about the environmental activities in the industry by visiting Panasonic's factory. This is the first-of-itskind government-industry collaborative educational project in Singapore. PRDS operates a state-of-the-art production system, including production of resource-conserving lightweight compressors, CO2 reduction from production

activities, and an improved recycling rate for wastes. In addition to such environmentallyconscious production activities, Panasonic will continue to support the local communities through the abovementioned new educational Module.



Module participants at the opening ceremonv

### The 'eco ideas' experience held in Asian countries

In fiscal 2010, Panasonic group companies in the Asia Pacific region hosted roadshows called the 'eco ideas'

experience in respective countries to introduce our environmentally-conscious products and production activities. The exhibition included an eco quiz, an eco calculator that illustrates the energy efficiency and CO<sub>2</sub> emissions reduction performance of Panasonic's latest products, and the 'eco ideas' Globe displaying visitors' own eco declarations.



View of 'eco ideas' experience roadshow

### Sea Turtle Conservation in Malaysia

Three Panasonic group companies in Malaysia are working together on environmental activities to enhance awareness

among employees. In fiscal 2010, a total of 230 employees and their family members participated in the sea turtle conservation activities, including beach cleaning and tree-planting activities to create shade for the incubation area.



Beach cleaning by employees and their families

### China

### Declaration to become an Environmentally Contributing Company in China

Panasonic announced a Declaration of Becoming an Environmentally Contributing Company in China in September 2007, and steadily worked towards relevant concrete targets. In a goal for the products, we tried to obtain the China Environmental Labels<sup>\*1</sup> in all applicable new products<sup>\*2</sup>. In the area of production, we have replaced major environmental targets set in the Chinese government's 11th Five-Year National Economic and Social Development Plan with our internal environmental indicators, and aim to accomplish these goals by fiscal 2010, which is a year earlier than the governmental plan. Also, a total of 51 plants passed the Clean Production Audit, a third-party audit system in China.

- \*1 China Environmental Labeling, Energy/Water Conservation Certification labels, and China Ecolabeling.
- \*2 14 product categories including TVs, air conditioners, refrigerators, etc.

	-		
Category	Indicator	Targets	Results
Enoral	CO <sub>2</sub> emissions*3	No initial target set	0.659 million tons
CO <sub>2</sub> emissions per basic unit of production 20%		20% reduction	36% reduction*6
Waste	Amount of total waste including revenue- generating waste per basic unit of production	35% reduction	48.8% reduction*6
	Recycling rate*4	95% or more	96.4%
Chemical substances	Release and transfer of key reduction-target substances*5	30% reduction	50.9% reduction*6
Water	Water consumption per basic unit of production	10% reduction	46.9% reduction*6

#### Fiscal 2010 targets and results for factories in China

"3 Absolute amount in a single year. \*4 Recycling rate = Amount of resources recycled / (Amount of resources recycled + Amount of final disposal). \*5 See page 21 for target substances.
 \*6 Compared to fiscal 2006.

### Aiming at becoming a model company in environmental contribution

### In May 2009, Panasonic held the Panasonic China

Environmental Forum 2009 in Beijing, where we declared our intention to become a corporate role model for environmental contributions in China and launched several new initiatives.

#### Initiative summary

Products	Launching top level energy-saving products successively
Manufacturing	Offering know-how of environmentally-conscious manufacturing to society
Human resources	Spreading employees' eco activities into local society

### New environmental contribution started

In June 2009, Panasonic launched its "One million trees over 10 years" tree planting campaign and the "One million children over 10 years" environmental education program. Through the tree planting activities, a total of 25,000 trees were planted in fiscal 2010. In the education program, 23,000 elementary school students were taught by Panasonic staff members. Panasonic also started the training of environmental specialists in Chinese corporations. To date, two sessions have been held, one in collaboration with State-Owned Assets Supervision and Administration Commission of the State Council (SASAC), and the other with Green Industry and Technology Promotion Center (GITPC) in Shanghai, at which 84 engineers attended.

### **Europe**

### 'eco ideas' Declaration in Europe

Panasonic Europe Ltd. announced the 'eco ideas' Declaration in October 2008, which set environmental sustainability management targets to be achieved by fiscal 2010. All the targets listed in the Declaration were successfully met, including the introduction of environmentally-conscious products, such as refrigerators and washing machines with Europe's top-class energyefficiency performance; accelerated CO<sub>2</sub> reduction in production processes; and collaboration with stakeholders, such as environmental NGOs.

#### Fiscal 2010 targets and results of 'eco ideas' Declaration in Europe

Category	Targets	Results
Products	Introduce 20 Superior Green Products	20 Superior Green Products were introduced
Manufacturing	Reduce CO <sub>2</sub> emissions from European production sites by 6,000 tons or more than fiscal 2007 (equivalent to 10%)	Reduced by 0.021 million tons
Global Citizenship Activities	Promote local eco activities jointly with NGOs and other stakeholders	Participated in the WWF International Arctic Program     Hosted "kids school – eco learning" program

### Joint pilot project of Home Energy Management System (HEMS) started in Europe

Together with SEAS-NVE, a Danish utility company, Panasonic started a pilot project of coordinated operations of Smart Grid, a next-generation electricity network operated by SEAS-NVE, Smart Meter, an advanced electrical meter to identify home power consumption via telecommunication networks, and Lifinity, a commercially available Home Energy Management System (HEMS) offered by Panasonic Electric Works. We also opened an exhibition house near Copenhagen to demonstrate the above test details and Panasonic's environmental efforts timed to coincide with the 15th Conference of the Parties to the United Nations

Framework Convention on Climate Change (COP15). Panasonic works to provide eco solutions in Europe through HEMS, which realizes home energy conservation by networking various home appliances.



Appearance of exhibition house

#### Environmental education for elementary school students

In November 2009, Panasonic Europe Ltd. offered environmental education sessions to elementary school

students in Germany and the United Kingdom. A total of 120 students in the two countries attended the sessions, creating essays with drawings that summarized their studies about climate change.



Elementary school students studying about climate change

### USA

### Panasonic receives 2010 Partner of the Year award from Energy Star

In March 2010, Panasonic Home & Environment Company was named as a 2010 Energy Star Partner of the Year by the United States Environmental Protection Agency. This was in recognition of its commitment to the energy-efficient

ventitlation fans across design, manufacturing, and sales and marketing, as well as its efforts to communicate the importance of energy efficiency to a wide range of stakeholders. The award is granted to those who have made the highest achievements out of 17,000 Energy Star Program partner corporations and organizations.



Ventilation fan (FV-08VKM2) Achieved the industry's highest-class energy efficiency and quietness

### Panasonic sponsors a recycling-themed science technology competition

Panasonic Corporation of North America sponsors the Panasonic Creative Design Challenge (CDC) every year jointly with the New Jersey Institute of Technology. The 2010 challenge was to design and build a "Recycling Plant for the Great Pacific Garbage Patch," in which 45 teams of high school students from across New Jersey participated. They designed and created devices to sort wooden squares, water

bottle caps, and batteries into separate recycling bins. The final competition which took place in April included the 30 selected high school teams, with the Top 4 winning scholarships and Panasonic products.



Students creating a waste sorting device

### Latin America

### 'eco ideas' Declaration in Latin America

Aiming to become the No. 1 Green Innovation Company in the Electronics Industry in Latin America, Panasonic announced the 'eco ideas' Declaration in Latin America in Costa Rica, Mexico, and Brazil in April 2010.

The Declaration is intended to maximize the size of our environmental contributions in Latin America, where environmental awareness has been increasing. We aim to further push forward with our activities.



Announcement of the Declaration in Mexico

#### Initiative summary

Lifestyles	Double the regional sales of products with industry-leading environmental performance by fiscal 2013 (compared to fiscal 2010)
Business- styles	<ol> <li>Reduce total CO<sub>2</sub> emissions from production activities by 10% by fiscal 2013 (compared to fiscal 2006)</li> <li>Develop 'eco ideas' Factory in Latin America by fiscal 2012</li> <li>Contribute to local communities by taking initiatives in driving environmental activities together with communities</li> </ol>

### Environmental education for employees and their families

Panasonic Peruana S.A. holds an outdoor event annually for employees and their families. The event held in October 2009 included a short play about the 3Rs (Reduce,

Reuse, and Recycle), a quiz, and other programs to help

both parents and children learn about the environment. The employees are also keen to practice their eco lifestyles at home, as well as in their factories.



Children answering questions

### Middle East & Africa

### Raising environmental awareness among consumers

In October 2009, Panasonic participated in GITEX 2009, the largest information, telecommunication, and audio & visual equipment exhibition in the Middle East. A section to learn about environmental issues based on an approach of "Do, Know, Think, and Feel" was set up, in which

our environmentconscious products and technologies were introduced. Many visitors also participated in 'eco ideas' Globe to declare their own eco efforts.



Declaration of visitor's eco efforts

### Inviting children to the factory for environmental education

Panasonic Energy Tanzania Co., Ltd. invited 25 local elementary school students to its factory in November 2009. Together with employees, the children planted 50 trees and

joined the factory tour to study how batteries work, how they are produced, and how the environment should be conserved. They also enjoyed making their own batteries.



Presentation of study results by children

### Japan

### Love the Earth Citizens' Campaign (LE Campaign)

Believing that only truly green-minded employees can manufacture truly green products, Panasonic has been promoting Love the Earth Citizens' Campaign (LE Campaign) since 1998. The Campaign is intended to raise environmental awareness among employees and their families through engaging in environmental activities at home and in their local communities, in addition to their efforts in business operations.

The status of the LE Campaign in fiscal 2010 is as follows: 34,000 households practice the Household eco-account book; 4,200 households use eco bags for shopping; and 35,100 individuals participate in environmental volunteer activities (all numbers are approximate). This represents approx. 83% of employee households in Japan. All employees strive to deepen their understanding on the global environmental issues and spread the eco life to their local communities.



Commemorative ceremony of planting trees presented by 17,000 Panasonic employees at Nakanoshima Park in Osaka

### Biwako 'eco ideas' Club established

Taking a cue from the Environmental Statement announced by Home Appliances Company (HAC) in June 2008, a voluntary citizen group, the Biwako 'eco ideas' Club was established. To maintain the water quality and eco system of Lake Biwako, the Club is working together with the local community on projects such as lakeside cleaning, reed conservation, surveys of the water environment, hosting environmental seminars, and operating "I Kids," an eco club for children. Jointly with Panasonic BYOS Clean Network Council, the Club conducted a water environment survey across 10 prefectures in the Kinki area in June 2009. Based on the results from 105 survey points across 85 rivers, an original water environment map was created and made publically available.





Participating in Lake Biwako cleaning on Biwako Day (July 1) with HAC

Survey on living creatures in the Okami River, a first-grade river flowing into Lake Biwako

### Environmental education program in Sasayama

In June 2009, a new environmental learning program for elementary school students started at Sasayama Children's Museum located in Sasayama City in Hyogo Prefecture, Japan. The program was named the "Sasayama Environmental Education Program" and encourages children to learn about the environment through nature.





Participants surrounding the camphor tree planted to commemorate the program opening

Children exploring the hills

This project makes use of Panasonic's facilities and other resources, and will be developed into an advanced environmental education model in cooperation with local government, educational institutions, environmental education facilities and local human resources, based on the concept of Education for Sustainable Development (ESD) as advocated by the United Nations. The program offers various opportunities for today's children, who are less in touch with nature, society and the community, to touch, feel, and think about nature, and to reflect what they learn through hands-on activities to their lifestyles. Panasonic intends to expand this program nationwide.

#### Hosting eco learning event at showrooms

Panasonic Center Osaka hosts Eco Laboratory, in which children can learn about new energy sources and energyefficient technologies through interesting experiments and craft work, with a new theme presented every month. Panasonic Center Tokyo also holds regular environmental workshops for families to learn about the environment together in an enjoyable manner. Both aim to cultivate children's environmental awareness and interests.





Experiment to generate rain drops (Osaka)

Session to create a hand-winding power generator(Tokyo)

### **Overview of Environmental Impact from Business Operation**

In order to mainly manufacture and market electrical and electronic products, Panasonic consumes petroleum and electricity as energy sources and resources as raw materials of parts and components. As a result, we emit CO<sub>2</sub> and wastes to the environment. This diagram maps the environmental impact from our business operation from a procurement stage to recycling activities.



#### Calculation model

<Area Covered> Global

<Scope>

- Production: 274 manufacturing sites
- Logistics: Logistics stage of procurement, production, marketing and waste by partner companies and Panasonic
- Product use: Lifetime power consumption of covered products and CO<sub>2</sub> emissions associated therewith. Lifetime power consumption estimated based on the number of products sold, annual power consumption, and usage time (Length of years in which Panasonic defines replacement parts are available). Following CO<sub>2</sub> emission coefficients of purchased electricity (unit: kg-CO<sub>2</sub>/kWh) for each region used: 0.41(Japan); 0.487 (Europe); 0.579 (North America); 0.74 (China); 0.927 (India); 0.527 (Asia Pacific/Northeast Asia); 0.332(Latin America); 0.327 (other regions)
- Recycling: Recycling of products means to use by oneself or to make into a state available for sale or free of charge the components and materials of a separated product
- Input: An amount of purchased electricity from power utilities, a volume of heavy oil and kerosene, and a volume of water, industrial water and groundwater

- Output: CO<sub>2</sub> emissions associated with the use of electricity, gas, LPG and petroleum, NOx and SOx emissions from business sites governed by legal regulations and ordinances, and water discharge to sewage and public water districts
- \*1 30 major products with large amounts of energy and resource use
- \*2 Air-conditioners, TVs, refrigerators/freezers, washing machines/laundry dryers and PCs
- \*3 Covering Japan only

#### <Definitions of the 30 major products>

New fiscal 2010 models of:

Plasma TVs, LCD TVs, CRT TVs, DVD recorders, SD stereo systems, fax machines, refrigerators, air conditioners, microwave ovens, IH cooking heaters, washer/dryers, fully-automatic washing machines, clothes dryers, rice cookers, dish washer/dryers, natural coolant (CO<sub>2</sub>) heat pump water heaters, electric thermos pots, electric carpets, vacuum cleaners, heated toilet seats with warm water sprays, electric irons, dehumidifiers, humidifiers, ventilators, air purifiers, bathroom ventilators/dryers, range hoods, home-use fluorescent lamps/silica bulbs, home-use lighting equipment (evaluated its resources only, because the amount of power consumption is included in fluorescent lamps), and hair dryers

### **Environmental Action Plan: Green Plan 2010**

The Green Plan summarizes the specific targets and actions for environmental management that Panasonic seeks in fiscal 2011, and has been bolstered as necessary since its formulation in 2001. The Plan was redesigned into three 'eco ideas' after the 'eco ideas' Strategy announcement in October 2007, and initiatives have been promoted since then.

In fiscal 2010, targets for fiscal 2011 were achieved in almost all items, which resulted in accomplishing the initial purpose and completion of its role. We aim to become a green innovation company with a global perspective through forming/implementing new action plans from fiscal 2011.

### 'eco ideas' for Products

Items	Indicators	Targets for fiscal 2010	Results in fiscal 2010	Targets for fiscal 2011
Green Products (GP)	Number of models accredited as Superior GPs $^{\star 1}$	200	395	250
	Number of models with industry-leading energy-efficiency	200	327	_

### 'eco ideas' for Manufacturing

Items Indicators Ta		Targets for fiscal 2010	Results in fiscal 2010	Targets for fiscal 2011	
	Production	Reduction of CO <sub>2</sub> emissions(compared to fiscal 2007)	0.48 million tons	0.84 million tons	Fiscal 2001 level
Prevention of global warming Logistics CO <sub>2</sub> er		CO <sub>2</sub> emissions per basic unit *2	At least 1% reduction compared to the previous year	13.7% reduction	At least 1% reduction compared to the previous year
Reduction in che substance	emical	Release and transfer of the Key Reduction-target substances (compared to fiscal 2006)	8% reduction	43.2% reduction	10% reduction
Wastes	Wastes	Wastes per basic unit *3(compared to fiscal 2001)	14% reduction	7% reduction	16% reduction
	(including revenue-	[Japan] Achieved a recycling rate of 99.5%*5 at all sites*4	All sites*4	Achieved at all sites*4	All sites*4
Recycling generating wastes) Water circulation	generating wastes)	[Outside Japan] Average of the recycling rate*5 achieved by all sites	92.5%	93.0%	95%
	Water consumption per basic unit*6(compared to fiscal 2001)	22% reduction	17% reduction	24% reduction	
Green Factories (GF)		GF accreditation rate*7	F accreditation rate*7 82%		At least 90%
Product recycling		<ul> <li>Promotion of advanced technologies to select and reuse materials</li> <li>Implementation of recycling measures localized for each region in the world</li> <li>Promotion of recycling resources of recycled materials</li> </ul>		Achieved the target	Same target as fiscal 2010

#### 'eco ideas' for Everybody, Everywhere

Items	Activity targets	Results in fiscal 2010
Love the Earth Citizens' Campaign (LE Campaign)	<ul> <li>[In Japan] Rate of employees' households accredited as LE families: At least 80% in fiscal 2011</li> <li>Global promotion of environmental volunteer activities</li> </ul>	<ul> <li>About 83% of employees' households in Japan accredited as LE families</li> <li>Globally continued implementation of Panasonic Eco Relay</li> </ul>
Global Eco Projects	Global promotion of eco projects	China and Europe: Continuously promoted Eco Project     Asia: Announced 'eco ideas' Declaration
Social Contribution (Biodiversity conservation, etc.)	Promotion of partnership with World Wide Fund for Nature (WWF)	<ul> <li>Continuously promoted partnership with WWF</li> <li>Established a biodiversity project and began activities in the main business</li> </ul>

### **Environmental Management**

Items	Activity targets	Results in fiscal 2010
Development of promotion system and human resources	Enhancement of environmental management systems and environmental IT systems, active development of human resources, etc.	Rebuilt and started operating a REACH Regulation-compliant management system for chemical substances contained in materials
Environmental risk management	Measures against contamination by PCBs, VOCs and heavy metals	Following the plans, promoted management and treatment of polluted soil and PCB wastes

\*1 Products with the industry's No.1 environmental performance in at least 1 of the following items: prevention of global warming, effective utilization of resources and chemical substances management \*2 CO<sub>2</sub> emissions / weight of products (components) transported \*3 Waste generation (including revenue-generating wastes)/Consolidated sales (without price adjustment) \*4 Sites under business domain companies \*5 Recycling rate = Amount recycled / (Amount recycled + final disposal amount) (In Japan, the target value is mandatory for each site; outside Japan, the target is set for an average value of all sites.) \*6 Water consumption / Consolidated sales (without price adjustment) \*7 Rate of factories achieving an internal baseline score of environmental impact reduction in a total number of factories

### **Environmental Governance**

### Promotion of environmental sustainability management based on the PDCA cycle

Panasonic's environmental policy has been established based on the corporate Management Policy and the Green Plan 2010. Subsequently, the Environmental Working Committee meets to communicate detailed plans to employees groupwide, setting them out in specific action plans. To review the progress and results of each operational site, we collect major environmental performance data monthly (or annually), introduce additional measures as necessary, and also disclose annual environmental performance data following a thirdparty review. From fiscal 2009, the amount of CO<sub>2</sub> emissions reduction was added to key management indicators, and was linked to the business performance evaluations of business domain companies. The Environmental Working Committee is led by the director in charge of environmental affairs and comprises environmental compliance administrators from domain companies and regional headquarters. This committee is responsible for environmental issues and to ensure the thorough implementation of corporate management policies and measures for domain companies. In addition, various environmental committees according to issues are set up to address and facilitate specific problems. On April 1, 2010, Panasonic set up the Group Management Innovation Division directed by the President and the Environment Innovation Subcommittee directed by the Executive Vice President, aiming to accelerate group management innovations. Under the division, the Corporate CO2 Reduction Contribution Promoting Committee and the Corporate Resource Recycling Promoting Committee have been established to propel related activities company-wide.

### **Environmental Education**

### Environmental education as the foundation of eco activities

Panasonic acknowledges the importance of education that inspires people to carry out eco activities. This is why we focus on improving the environmental awareness and skills of all staff members through a systematic training scheme that consists of both general and specialized programs, presented in the most suitable manner according to their expertise and position.

The general program, in which staff members learn about broader environmental issues and Panasonic's environmental activities, is provided through an e-learning system available in Japan. In fiscal 2010, a total of 31,414 staff members participated in this program. For staff on production lines, we provide CD-ROMs with the same curriculum as e-learning. Some of the curriculums are also used in the introductory training for new employees, preparatory seminars before overseas appointments, and seminars for promoted employees.

Further, those who are on environmental duty are registered as environmental specialists and given specialized education. The Professional Environmental Human Resources Development Guidelines were established in fiscal 2007, and a curriculum based on the guidelines was created to reinforce the management and specialized skills of human resources in environmental issues. A total of 426 employees, including non-environmental specialists, attended 10 programs held in fiscal 2010 worldwide. The program particularly focuses on staff in China and other Asian countries, aiming to help achieve our CO<sub>2</sub> reduction targets.





### Environmental Management Systems

### ISO 14001 certification

Panasonic is operating Environmental Management Systems between a corporate headquarter division and business domain companies. Except for manufacturing companies newly established within the last three years, all our manufacturing sites have built their own Environmental Management Systems and all manufacturing sites worldwide acquired ISO 14001 certification by the end of 1998. At present, we are fostering the establishment of Environmental Management Systems at our nonmanufacturing sites, in order to reinforce environmental sustainability management across the Group.

Pegion	Number certific	Total	
negion	Manufacturing Non-manufacturing		
Japan	39	26	65
Americas	15	2	17
Europe	13	1	14
Asia/Oceania	46	11	57
China/Northeast Asia	55	2	57
Total	168	42	210

Obtainment of ISO 1400 <sup>-</sup>	certification (As of end	l of March 2010)
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\* Including multi-site certifications. Depending on the consolidation and closure of sites and promotion of multi-site certifications, the number of certifications obtained varies each year.

### **Environmental Performance System**

In order to implement the PDCA cycle for environmental sustainability management, it is essential to collect a significant amount of environmental performance data on energy, waste, chemical substances, and water etc., at each business site in a prompt and accurate manner. Panasonic has developed and introduced an Environmental Performance System as a means of globally collecting and managing environmental data from all our manufacturing sites.

Since fiscal 2008, we have collected monthly major environmental performance data from all our manufacturing sites. Based on the data gathered through this system, the balance of monthly CO<sub>2</sub> emissions is determined, as well as assessing performance progress and any related issues to be addressed. This information is then used to ensure the thorough implementation of the necessary countermeasures. The Environmental Performance System plays a vital role in achieving our CO<sub>2</sub> reduction targets.

#### Operation of the environmental performance system



### Measures against environmental risks

Panasonic defines risks as "factors that might hinder the achievement of business goals." Our Global and Group Risk Management Committee, which is a cross-divisional groupwide committee, regards stricter environmental regulations as one of the most serious risks for our group and takes measures to ensure compliance with such regulations, particularly those concerning chemical substances and soil/groundwater pollution. In the event that such a risk is identified at one of our business sites, the parental business domain company reports the fact to the committees on specific issue (P.35), which then examines appropriate countermeasures. In the case of a serious risk, we hold Emergency Countermeasures Meetings in order to minimize the impact of such risk and undertake a prompt response to resolve it.

### **Environmental Accounting**

### Environmental accounting supporting environmental sustainability management

Panasonic globally collects data on its environmental conservation costs and economic benefits obtained through its environmental activities in relation to generated/controlled environmental impact. This data is internally utilized as basic information for our continuing environmental sustainability management.

#### Environmental accounting

Accounting period: From April 2009 to March 2010 Companies covered: Panasonic Corporation and its affiliated companies inside and outside Japan

Classification by the Ministry of the Environment of Japan	Investments*1	Expenses*1,2	Economic benefit
R&D	664	13,032	-
Global environmental conservation	5,164	1,989	6,270
Pollution prevention	3,585	4,787	-
Resource circulation	482	4,927	15,258
Upstream and downstream	351	5,839	2,933
Administration	22	8,092	-
Environmental remediation	13	5,819	-
Social activity	0	236	_
Total	10,280	44,722	24,461

#### Environmental conservation benefits (in physical terms)

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Categories	Emission reduction	Reference indicator: environmental impact			
-	Fiscal 2010	Fiscal 2009	Fiscal 2010		
CO <sub>2</sub> emissions from the use of our products	14 million tons	78 million tons	64 million tons		
CO <sub>2</sub> emissions from production activities	0.33 million tons	3.47 million tons	3.14 million tons		
GHG emissions (other than CO <sub>2</sub> )* <sup>3</sup>	30,000 tons	200, 000 tons	170, 000 tons		
Release and transfer of key reduction- target chemical substances	900 tons	4,100 tons	3,200 tons		
Final disposal of waste	4,200 tons	18,600 tons	14,400 tons		
Water consumption	4 million m <sup>3</sup>	53 million m <sup>3</sup>	49 million m <sup>3</sup>		
CO <sub>2</sub> emissions from transportation activities	100,000 tons	880,000 tons	780,000 tons		

\*1 Where an entire amount of investment and expenses cannot be regarded as environmental conservation costs alone, the difference or appropriate portions (divided proportionally) are calculated.

\*2 Expenses include a cost of capital investment depreciation.

\*3 GWP ton- CO2 (GWP: global warming potential).

(million ven)

### **Third-Party Opinion**

Panasonic has been building a partnership with the Natural Step since 2001. The Natural Step has identified key requirements for a sustainable society in consensus with scientists, and many environmentally-industrialized countries and corporations refer to these conditions in determining their sustainable strategies.

In fiscal 2010, we requested the Natural Step to review our activities under the 'eco ideas' Strategy, analyze the vision looking to the 100th anniversary of our founding in 2018 and the new midterm management plan. We take the opinions voiced by the Natural Step into account in order to make a steady progress in our environmental sustainability management.

### Opinion on the 'eco ideas' Strategy, Vision for the 100th Anniversary of its Founding and the New Midterm Management Plan

#### Review of the 'eco ideas' Strategy

In a bold and ambitious move, three years ago Panasonic announced its 'eco ideas' Strategy. Panasonic voiced its aim to reduce total CO<sub>2</sub> emissions from production activities by 300,000 tons by 2010, while in creasing production. It was indeed an advanced move to announce a CO<sub>2</sub> emission reduction based on a total quantity when there were few corporations taking such a sum total approach. Panasonic also adopted a policy to increase the number of models in its No. 1 energy-efficient products to 200 by fiscal 2010, totally phasing out the low-ranked models based on the 'Energy Conservation Performance Catalog' in Japan. Further, their declaration and activities towards becoming an Environmentally Contributing Company in China were certainly ambitious.

Looking back over the three years of the 'eco ideas' Strategy, we see Panasonic has successfully achieved the targets in their three fields: 'eco ideas' for Products, 'eco ideas' for Manufacturing, and 'eco ideas' for Everybody, Everywhere.

Panasonic showed us, both inside and outside of the company, that firm leadership, united will, and efforts by all staff members can achieve the highest environmental targets, regardless of financial crises or major recessions. They are a global model.

Still, 'eco ideas' Strategy is not perfect. Perhaps its weakness is that the development of products that contribute to the trend of a sustainable society and the measures of sustainable energy usage are difficult to implement within a three-year span. We suggest setting a final goal to be achieved over a period of 20 to 30 years, then break down the goal into various mid-term management plans. This should heighten staff members' motivation and encourage them to create more innovative solutions.

### Vision for the 100th anniversary of its founding and the new midterm management plan

As the next step under the 'eco ideas' Strategy, Panasonic announced its aim to become the No. 1 Green Innovation Company in the Electronics Industry by 2018, when Panasonic marks the 100th anniversary of its founding. This determination is wonderful and the environmental leadership of Panasonic is praiseworthy. In particular, the statement to make the "environment" central to all of its business activities and bring forth innovation through Green Life and Green Business is epoch-making. Panasonic has its own "green indexes" that defines the criteria to be industry No.1 in the environmental field, which include contributions in reducing CO<sub>2</sub> emissions and recycling resources. Additionally, they also included increasing the size of their energy systems business and achieve a high sales ratio of No. 1 eco-conscious products. We value this decision as a wise business strategy.

We expect that Panasonic's focus on their energy system business will lead to the increased proliferation of sustainable energy usage.

It is expected that the market for sustainable energy such as solar power generation, fuel cells using biogas, and batteries for electric vehicles will substantially expand. We hope that Panasonic takes a proactive approach in the global markets within this field. The sales ratio of No. 1 eco-conscious products will also indicate the success of sustainable marketing. The recent introduction of the eco-point system in Japan has accelerated sales of energyefficient products, and such an incentive is necessary worldwide. The government's support should be a part of the drive to increase sales of energy-efficient products.

The world is facing the need to stop CO<sub>2</sub> emissions from increasing and turn the trend into a reduction within the next ten years. Under these circumstances, Panasonic's aim to bring their CO<sub>2</sub> emissions, including CO<sub>2</sub> emissions by product usage, towards a decreasing trend by 2018 can be highly revered. However, if their focus is all of its business activities, they should also include the CO<sub>2</sub> emitted by their suppliers. The requirements for self-declared environmental claims under ISO 14021 will become available at the end of 2010. It would be useful for Panasonic to utilize such ISO standards to establish their global foundation for communications.

As for chemical substances, Panasonic should adopt a strategy that is more proactive than defensive. It is necessary to establish a strategy based on long-lasting and sustainable principles, that is, the banning of chemical substances that are non-natural and hard to be biodegradable.

Two points should be noted in regard to the new midterm management plan. One is the intense focus on the increase of the overseas sales ratio, particularly in eleven emerging countries. The other is the company's declaration to shift its business paradigm from individual product-oriented to solution & systemsoriented aiming at further growth. China, India, Indonesia and Vietnam represent a large and rising market, however, applying conventional business methods there will only lead to an impasse. That is because the resources required for a corporation to freely expand its business are becoming scarce. Also, recycling systems in emerging countries are still inadequate and therefore the risk of environmental pollution is high. It is a massive challenge to reduce environmental impact while improving quality of life and strengthening economic growth in emerging countries. Selling services rather than products, using replaceable components as energy-efficient technologies progress, 100% collection and recycling of used products, and providing an entire solution system to prevent problems caused by individual products-this could be the final goal of a sustainable society. The Natural Step has hope for Panasonic's leadership in decoupling economical development from increasing environmental impact, which is surely one of the biggest challenges ever faced by human civilization.





Sachiko Takami Chief Executive of the Natural Step Japan





On-site review at Panasonic Automotive Systems Dalian Co., Ltd.



On-site review at Panasonic Ecology Systems Guangdong Co., Ltd.

Outline of on-site review

- Period: From February to April in 2010
- Sites: Eleven sites



This J-SUS imprint indicates that the environmental information contained in the 'eco ideas' Report satisfies the applicable provision of the code of the Japanese Association of Assurance Organizations for Sustainability Information. http://www.j-sus.org/

	•	1	
Media/activities	Results	Media/activities	Results
Website (in Japanese)	Approx. 1.3 million page views	Lecture meeting/article contribution	19
Website (in English)	Approx. 450,000 page views	Interview with reporters	12
Stakeholder dialogue	1	News release	13
TV/radio commercial	95	Response to surveys/ questionnaires	41
Newspaper advertisement	6	Inquiry/information request	1,737

#### Environmental communication results (handled by the head office of Panasonic Corporation)

#### Newspaper advertisement





#### History of environmental report issuance

Voor	Number of copies		Number of	Data of inguance	
rear	Japanese	English	Chinese	pages	Date of issuance
Environmen	tal Report				
1997	17,000	8,000	_	24	February 1998
1998	10,000	10,000	_	28	March 1999
1999	18,000	5,000		40	September 1999
2000	22,000	5,000	_	56	September 2000
2001	20,000	5,000	—	66	September 2001
2002	25,000	5,000	—	78	June 2002
Environmen	tal Sustainat	ility Report			
2003	35,000	5,000		92	June 2003
2004	25,000	8,000	4,000	76	June 2004
The Panaso	nic Report fo	or Sustainab	ility		
2005	30,000	10,000	4,000	54	June 2005
2006	30,000	10,000	5,000	62	June 2006
2007	20,000	7,000	6,000	42	June 2007
2008	14,000	8,000	5,000	30	June 2008
2009	Posted on w	ebsite only (	PDF format)	138	June 2009

#### History of Environmental Data Book issuance

Voor	Number of copies			Number of	Data of issuance
real	Japanese	English	English Chinese pages		Date of issuance
Environmental Data Book					
2005	10,000	5,000	5,000	66	August 2005
2006	10,000	5,000	5,000	68	August 2006
2007	13,000	5,000	5,000	66	June 2007
2008	13,000	5,000	3,000	72	June 2008
'eco ideas' Report					
2009	10,000	5,000	3,000	50	June 2009

#### On-site environmental communication results (by region)

	Japan	Americas	Europe/ Africa	Asia/ Oceania	China/ North-East Asia
Site tours (visitors)	43,305	308	1,042	2,821	1,139
Community con- tribution activities* (frequency)	769	22	33	80	73

\* Environmental events involving our participation and cooperation, including briefings to local residents on our environmental activities and other such meetings.

#### Number of business sites disclosing information (by region)

. China/Nor						
Japan Americas Europe/Africa Asia/Oceania East Asia	Japan	Americas	Europe/Africa	Asia/Oceania	China/North- East Asia	
128 15 18 46 62	128	15	18	46	62	

\*Number of site reports posted on the Environmental Activities page in Panasonic's website

#### Participation in major exhibitions (fiscal 2010)

Exhibitions	Venues	Period	
China Environmental Forum 2009	Beijing (China)	May 2009	
Interop Tokyo2009	Tokyo	June 2009	
IFA 2009	Berlin (Germany)	September 2009	
Home Care & Rehabilitation Exhibition	Tokyo	September 2009	
CEATEC JAPAN 2009	Tokyo	October 2009	
GITEX 2009	Dubai (UAE)	October 2009	
International Broadcast Equipment Exhibition 2009	Tokyo	November 2009	
Eco-Products 2009	Tokyo	December 2009	
CES 2010	Las Vegas (USA) January 201		
The 6th Eco-Products International Fair	Jakarta (Indonesia)	March 2010	
SECURITY SHOW 2010	Tokyo March 2010		





China Environmental Forum 2009 Site of Panasonic Center Beijing



Eco-Products 2009 Elementary/junior high students experiencing 'eco ideas'

CETEC JAPAN 2009 Section introducing energy-efficiency



The 6th Eco-Products International Fair Visitors writing their own 'eco' declaration

### **Environmental Communication**

Category	Presenter and awards	Specific prize	Recipient company and details	
Environmental sustainability management	China Entrepreneur Magazine, Daonong Center for Enterprise and Guanghua School of Management, Peking University 2nd China Green Company Awards	China Green Company Award	Panasonic Corporation of China	
Products & services		Minister's Prize, the Ministry of Environment, Eco- Products category	Panasonic Corporation (received jointly with eight companies) Household fuel cell: ENE+FARM	
	Eco-Products Awards Steering Committee 6th Eco-Products Awards		Panasonic Shikoku Electronics Co., Ltd. Digital hearing aid: ONWA	
			Panasonic Cycle Technology Co., Ltd. (received jointly with JTB Tokyo Metropolitan Corp.) Eco bike: Tabi-Chari	
	Life Cycle Assessment Society of Japan 5th Japan LCA Forum Awards	Prize from the Director-General of the Industrial Science and Technology Policy and Environment Bureau, Ministry of Economy, Trade and Industry	Panasonic Corporation Reduction of CO <sub>2</sub> emissions by 60% throughout the entire house	
	Japan Center for Area Development Research (supervised by the Ministry of Land, Infrastructure, Transport and Tourism) House of the Year in Electric 2009	Prize for excellence	PanaHome Corporation New EL·SOLANA	
Resource utilization	Clean Japan Center Foundation Resource Recycling Technology and System Awards	Chairman's Prize	Home Appliances Company, Panasonic Corporation Development of Pelletizeless recycling system for home appliance plastics	
Management of chemical substances	Ministry of the Environment Commendation for persons of merit in volatile organic compound (VOC) measures	Prize for persons of merit in VOC measures	Kobe Plant, IT Products Business Unit, System Business Group, AVC Networks Company, Panasonic Corporation	
Logistics	Ministry of Land, Infrastructure, Transport and Tourism Green Logistics Partnership, Ministry of Land, Infrastructure, Transport and Tourism Award	Minister's Prize	Panasonic Mobile Communications Co., Ltd. Panasonic Logistics Co., Ltd. (received jointly with Japan Freight Railway Company and Nittsu Shoji Co., Ltd.)	
Environmental communication	Global Environmental Forum 13th Environmental Communication Awards	Prize for excellence in Environmental Reporting	Panasonic Corporation 'eco ideas' Report 2009	
		Prize for excellence in newspaper advertising (industry category)	Panasonic Corporation Energy saving and creation: Toyako	
	Dentsu Inc. 62nd Dentsu Advertising Award	Prize for excellence in the store-front poster category	Panasonic Corporation Sustainable environmental package	
		Prize for excellence in the station poster category	Panasonic Corporation Washer/dryer	
	Fuji Sankei Business i. 48th Business Advertisement Awards	Silver prize in the serial advertisement category	Panasonic Corporation 'eco ideas' House	
	Fuji Sankei Group 39th Fuji Sankei Group Advertising Award	Grand Prize in the media-mix category	Panasonic Corporation "I'm for ECONAVI" campaign	
	Nikkei Inc. 58th Nikkei Advertising Awards	Environmental Advertisement Prize, and Minister's Prize, the Ministry of Environment	Panasonic Corporation Eco Relay series	
	11th Kobe Shimbun Advertising Awards	Theme Prize	Panasonic Corporation Seeds of eco	
	Web Grandprix 3rd Japan Web Grandprix	Rich Internet Application Consortium (RIAC) special prize	Panasonic Corporation Website of "Lifestyle with virtually zero CO <sub>2</sub> emissions"	

#### Major awards in the environmental field (fiscal 2010)

Major honors in the environmental field (fiscal 2010) Listed in the Dow Jones Sustainability Indexes, FTSE4Good Global Indexes

Ranked 1st among 484 manufacturers in the Nikkei Environmental Management Survey, and 2nd among 560 companies in the Environmental Brand Survey

### History of Environmental Activities

As of March 31, 2010

Era	Panasonic Group	World	Japan
			1967 • Basic Law for Environmental Pollution Control enacted
			1968 •Air Pollution Control Law enacted
ہ 1970s	1970  •Pollution Survey Committee established		1970 •Water Pollution Control Law enacted
			1971 •Environment Agency established
	1972 •Environmental Management Office established	1972 •U.N. Conference on Human Environment held in	
		Stockholm (Declaration of Human Environment adopted)	
		1973 •First oil shock occurred	
	1975 •Environmental Management Regulations enacted		
		1979 •Second oil shock occurred	1979 •Energy Conservation Law enacted
		Layer adopted	
		1987 •Montreal Protocol on Substances that Deplete the Ozone Laver adopted	
1980s		World Commission on Environment and     Development (the Brundtland Commission)	
		advocated the concept of sustainable development	
	1988 •CFC-reduction Committee established		1988 •Ozone Layer Protection Law enacted
	1989 •Environmental Protection Promotion Office established		1991 •Keidanren Global Environment Charter enacted by Janan
	Code of Conduct) enacted		Federation of Economic Organizations
	•watsushita Froudet Assessment adopted and implemented		enacted
	1992 •Environmental Policy Committee established	1992 •The Earth Summit held in Rio de Janeiro, Brazil; Agenda21 and Rio Declaration on Environment and	
		Development adopted	
		Change adopted	
	1993 •Matsushita Environmental Voluntary Plan (Year 2000 targets) adopted		1993 •The Basic Environment Law enacted
	Matsushita Group's global environmental internal audits launched		
	1995 •Acquired Environmental Management System Certification at AV Kadoma Site (first in the Matsushita Group)	1995 •First Conference of Parties to the U.N. Framework Convention on Climate Change (COP1) held in	1995 •Containers and Packaging Recycling Law enacted
1990s	· · · · · · · · · · · · · · · · · · ·	Berlin	
		<ul> <li>ISO 14001 International Standard on Environmental Management Systems launched</li> </ul>	
	1997 • Corporate Environmental Affairs Division (CEAD) established	1997 •COP3 held in Kyoto and adopted the Kyoto Protocol	1997 •Keidanren Appeal on the Environment announced by Japan
	•Environmental Conference established (neid semi-annually)     1998 •Love the Earth Citizens' Campaign commenced		1998 •Home Appliance Recycling Law enacted (took effect in
	Recycling Business Promotion Office established     Eist any internation provide the setablished		2001)
	•First environmental report (1997) published		with Global Warming enacted
			•Energy Conservation Law revised: Top Runner Approach
	1999 •Green Procurement launched •Chemical Substances Management Bank Guidelings established		1999 •PRTR (Pollutant Release and Transfer Register) Law
	Acquired ISO14001 Certification in all manufacturing business units		
	2000 •Lead-free Solder Project commenced •Held first environmental exhibition for general public in Osaka	2000 •Global Reporting Initiative (GRI) issued The Sustainability Reporting Guidelines	2000 •Basic Law for Establishing the Recycling-based Society enacted
			Law for Promotion of Effective Utilization of Resources enacted
	2001 •Environmental Vision and Green Plan 2010 adopted     •Held Environmental Forum in Tokyo and Freiburg,Germany	2001 •Reached final agreement on the actual rules of Kyoto Protocol in COP7 held in Marrakesh	•Law Concerning Special Measures against PCBs enacted
	Matsushita Eco Technology Center launched		
	2002 •Panasonic center lokyo opened	2002 •Johannesburg Summit (Rio+To) heid	•Vehicle Recycling Law enacted
	2003 •Declared 'Coexistence with the Global Environment' as one of the	2003 •FII's WEEE Directive was enacted	Law for Countermeasures against Soil Pollution enacted
	twin business visions • Eactor X advocated as an indicator for Creating Value for a New		
	Lifestyle		
	Super GP Accreditation System launched     Achieved area was a provide		
	business sites (ongoing program)		
	•Held Environmental Forum In Tokyo 2004 •Environmental Vision and Green Plan 2010 revised		2004 •Prohibited manufacturing and use of products containing
	PCB Management Office established     Superior GP Accreditation System Jaunched		asbestos in principle
	2005 •Participated in Expo 2005 Aichi, Japan as an official sponsor	2005 •Kyoto Protocol entered into force	2005 •Expo 2005 Aichi, Japan held
	Green Plan 2010 revised     Continued with the nationwide Lights-out Campaign		<ul> <li>National campaign against global warming "Team -6%" launched</li> </ul>
	•3R Eco Project launched •Completed the elimination of specified substances (6 substances)		Marking for the presence of the specified chemical substances for electrical and electronic equipment
	• Matsuchita Group's Green Logistics Policy actablished		(J-Moss) established
	CF Accreditation System introduced		
	Installed the first commercial household fuel cell cogeneration		
0000	System in the new ornicial residence of the Japanese Prime Minister     Won the first place in Nikkei Environmental Management Survey		
2000s	2006 •Environmental specialist position established •ET Manifest introduced into all Panasonic's manufacturing eiters in	2006 •Restriction of Hazardous Substances (RoHS)	2006 •Relief Law for Asbestos Victims enacted
	Japan	Directive took effect in ED	obligations, widened product scope of its application, and
	Realized lead-free plasma display panels and introduced them to		
	•Full-fledge introduction of biodiesel fuel in logistics		
	2007 •Energy conservation activities at our factories in Malaysia approved as CDM project by the LLN	2007 •The Fourth Assessment Report of the Intergovernment Papel on Climate Change (IPCC) released	2007 • 'Cool Earth 50' announced by Prime Minister Abe
	•A new environmental mark introduced	Registration, Evaluation, Authorisation and     Restriction of Chemicals entered into force in EU	The Third National Biodiversity Strategy of Japan'     formulated
	Environmental Forum in China held	•Framework for CO <sub>2</sub> reduction agreed at	Ministerial ordinance partially amending the Enforcement     Description of the Woote Management and Public Cleansing
	in China" announced	•The Bali Road Map for the post Kyoto Protocol	Law' promulgated
	•ranasonic 'eco ideas' Strategy announced	•Administration on the Control of Pollution Caused	• Domestic Emissions Trading Scheme Review Committee'     established
		by Electronic Information Products (China RoHS) came into effect	<ul> <li>I ne Second Fundamental Plan for Establishing a Sound Material-Cycle Society' formulated</li> </ul>
	2008 •Established the Corporate CO <sub>2</sub> Reduction Promotion Committee	2008 •620 (conference of key countries' environmental	2008 •Cool Farth Promotion Program appounded by Prime
	Held environmental exhibitions, 'eco ideas' World     Home Appliances Company approximate and emissionmental statement in	and energy ministers) held	Minister Fukuda
	which named its Kusatsu site as 'eco ideas' Factory	чноккацо тоуако занітії пена	•Inisiabeling incluent of waste paper pulp percentage     •Long-term Energy Demand and Supply Outlook announced
	Established Environmental Strategy Research Center		S cabinet maugurated     Japan's Voluntary Emission Trading Scheme started
	2009 •Opened 'eco ideas' House, which suggests a lifestyle with virtually zero CO2 emissions throughout the entire house	2009 •China WEEE law promulgated •New framework for countermeasures against	2009 •Energy Conservation Law amended: Covered area expanded from factories to commercial sector facilities
	Asia/Oceania 'eco ideas' Declaration announced     Announced 'eco ideas' Eactoriae	global warming on and after 2013 (post-Kyoto Protocol) the Conhenhagen Accord was adopted	Flat-panel TV and clothes dryer added as covered products     under the Home Appliance Recycling Law
	(Plzen, Malaysia, Thailand, and Singapore)	at the COP15 (Copenhagen conference)	
	•SANYO Electric Co., Ltd. joined Panasonic Group	countries throughout the world accelerated actions	- המנטצמווום & המטווופר ווומטטטרמנפט
	2010 •Wision looking to the 100th appiversary of our founding' appounced	IUI LITE GREETI NEW DEAL	

### Reports on Panasonic's business activities

Reports related to Panasonic's business activities are composed of three reports: this 'eco ideas' Report, the 'Sustainability Report' which details information on our CSR initiatives, and the 'Annual Report' which contains financial data for shareholders/investors.



Corporate Social Responsibility (CSR) http://panasonic.net/csr/

Annual Report [PDF] This is available on our IR website.

IR Information http://panasonic.net/ir/



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