MITSUBISHI ELECTRIC
Changes for the Better

Environmental Performance Review 2013

Fulfilling Our Responsibilities within the International Community as a Global, Leading Green Company.

Remaining Focused on Environmental Issues and Adhering Strictly to a Policy of Ethical and Legal Compliance

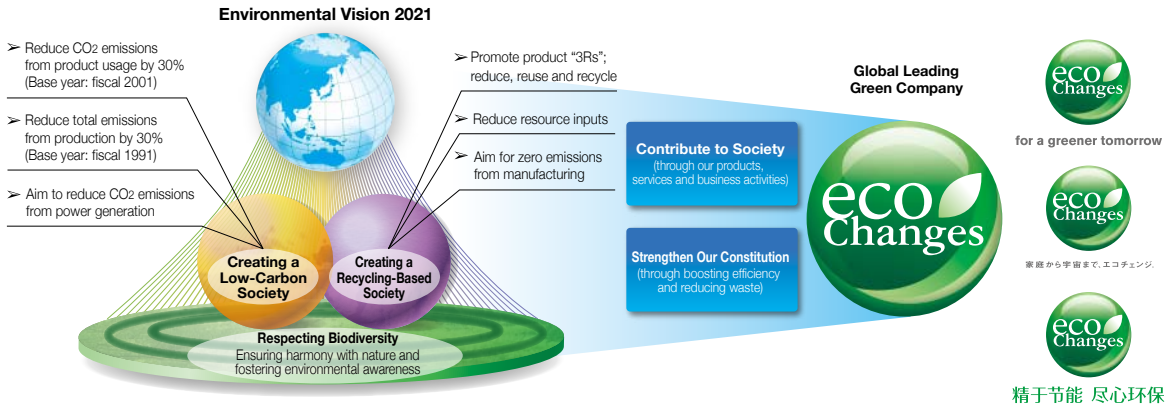
The Mitsubishi Electric Group positions ethical and legal compliance as the fundamental principle of its corporate management, and we are making committed efforts to strengthen internal controls while also focusing on employee education and training. As corporations come under an increasing level of public scrutiny and environmental regulations become more stringent, the ability of companies to comply with statutory and regulatory requirements is of vital importance. As we move forward, we will remain focused on environmental issues and adhere strictly to a policy of ethical and legal compliance in all aspects of our global activities.

Reducing CO_2 Emissions During Production and Product Usage

Under the 7th Environmental Plan, in effect since fiscal 2013*, Mitsubishi Electric is focusing on reducing CO_2 emissions during production and product usage. While we understand that reducing the amount of CO_2 emissions during production has less impact on the environment in absolute terms than reducing those during product usage, cutting back emissions during production is essential to strengthening our constitution as a manufacturer of goods and services. To this end, from the 7th Environmental Plan, we have started assessing our reduction efforts objectively using a per-unit indicator. This allows us to achieve our established targets without the assessments being overly influenced by changes in the surrounding economic environment.

Success in reducing CO_2 emissions during product usage will depend on our approach to promoting the widespread use of highly energy-efficient products. As an environmentally advanced company that provides diverse products and systems in all parts of the world, the Mitsubishi Electric Group will continue to take a global

*Fiscal year used here refers to the fiscal period starting on April 1st of the previous year and ending on March 31st of the year shown.



approach to the development of highly efficient products with the ultimate aim of making positive contributions to people's lives and the environment.

Creating Technologies and Products that Help Resolve Environmental Issues while Keeping an Eye on Supply Chains

To support the global expansion of our business, while recognizing our developed strengths, it is important that we maintain an unwavering commitment to localization and activities that best fit local conditions and needs based on respect for the legal system and the state of local industry infrastructure development in each country and region.

I am convinced that we possess world-class environmental technologies, a high sensitivity to ethical standards and a resilient spirit to overcome any challenge as evidenced in the wake of the 2011 Great East Japan Earthquake. I believe these strengths will provide strong impetus for environmental activities. Furthermore, our global expansion rests on our ability to instill these strengths in all members of the Group both in Japan and overseas, and on how we communicate and implement initiatives to ensure legal compliance and support environmental activities of all members within the context of global supply chains.

The business base supporting this localization is our strength in technologies and products, in demand globally. In this context, as part of our growth strategy, we plan to strengthen our environment and energy, and social infrastructure systems businesses, identifying them as key areas that can help to protect the environment. They possess the technological strengths and knowledge that were the basis of efforts to tackle and eventually overcome the pollution issues that arose as a result of Japan's period of rapid economic growth. We see it as our mission to globally expand the use of these environmental technologies that have produced these achievements, both in emerging countries seeking to establish robust social infrastructure and in developed countries working to renew theirs. In this way, we will fulfill our mission of contributing to the sustainable growth and development of society. In other businesses too, from the viewpoint of uncovering growth opportunities in global social issues, we will strive to further refine our technologies and products.

Incorporating Diverse Knowledge and Fostering Human Resources and Organizations Capable of Realizing a Sustainable Society

In promoting global business expansion and environmental activities, and aiming for ongoing improvements, it is vital to incorporate the knowledge and opinions of diverse people.

From a global perspective, the "knowledge" possessed by the Mitsubishi Electric Group could be seen as singular or uniform, a factor which has the potential to create weakness in periods of rapid change. As we expand our business globally, we will continue to create new value by striving to incorporate and acquire diverse knowledge, always keeping in mind the importance of learning from people in various countries and regions.

My mission as I work to steer the Mitsubishi Electric Group forward is two-fold: Bring together diverse human resources who are engaged in resolving global social issues, working in partnership with our stakeholders worldwide; and foster these human resources and organizations so that they are capable of producing technologies and products that contribute to resolving environmental issues.

K Yamanishi

Kenichiro Yamanishi, President & CEO

Aims and Activities of the 10 Business Groups

Through its products and services, the Mitsubishi Electric Group is engaged in environmental-based social contributions and corporate enhancements to strengthen its constitution designed to minimize its impact on the environment, aiming to consolidate our position as a global leading green company. Here, leaders from each of our business groups talk about changes taking place in their operating environments and discuss what they are focusing on in their initiatives and measures.

The following messages are current as of June 30, 2013.

Public Utility Systems Group

The Public Utility Systems Group supplies products that support social infrastructure like water treatment facilities, roadways and rolling stock to customers that construct social infrastructure. Three engineering and production bases in Japan, which are individual factories, manufacture customer-aligned products.

Helping Build Next-Generation Social Infrastructure with a Broad Range of Technologies and Continuous R&D in Order to Realize the Vision of a Low-Carbon Society

Takahiro Kikuchi
Executive Officer
In Charge of Public Utility Systems

Mitsubishi Electric's Public Utility Systems Group provides a host of products that serve a vital, long-term role in social infrastructure, including water treatment facilities, roadways and rolling stock. As part of this, in design/manufacturing, while ensuring high quality/functionality, we are continuing to promote less use of resources/power through size/weight reductions and higher performance/efficiency as the basis for our aim to realize a low-carbon society.

In recent years, we have seen heightened expectations toward the development of next-generation social infrastructure that makes full use of renewable energies and information and communication technology (ICT), which supports greater power supply efficiency and optimization. As such, we are working diligently on total energy and environmental solutions for railways. As part of our commitment to the total optimization of energy used by railways through ICT, we have developed new energy technologies and create and store energy for train energy management systems (TEMS), station energy management systems (SEMS), factory energy management systems (FEMS) and railway energy management systems (REMS). We recently developed a SiC-based main circuit system and auxiliary power unit for station buildings, both of which successfully increase energy savings. We are also focusing on the potential of smart communities, which will achieve stable supplies of energy using a combination of renewable energy and off-grid power sources. Going forward, Mitsubishi Electric's Public Utility Systems Group stands firmly committed to making society safer and more convenient for everyone by making full use of our wealth of proprietary technologies as well as R&D efforts.

We will also make changes in-house to improve our manufacturing equipment, operations and processes, including the use of LED lighting and higher efficiency air conditioners, with the ultimate goal of reducing the environmental impact of our production activities.

SiC-based rolling stock inverter

Ozone emitter

Energy & Industrial Systems Group

The Energy & Industrial Systems Group supplies products and systems for energy, including power generation, electricity transformation, transmission and distribution, to electric power utilities and regular corporations. Three bases, or individual production factories, partly mass production, form the core of manufacturing, supplemented by affiliated companies worldwide.

Helping Achieve a Low-Carbon Society through Developing High-Efficiency Equipment and Stepping Up Our Involvement in Businesses Related to Smart Grids/Smart Communities

Yoshiaki Nakatani
Executive Officer
In Charge of Energy & Industrial Systems

As a provider of a full range of equipment and systems, from power generation to transmission and distribution, we recognize that achieving a low-carbon society represents one of our most important missions. Based on this, the Energy & Industrial Systems Group is now focusing on two initiatives.

The first is the development of high-efficiency equipment and promoting its greater use. Under this initiative, we are developing and commercializing high-efficiency generators, switches for controlling heat generation, transformers that reduce energy loss, and equipment that eliminates or reduces the use of SF_6 gas, which has a high global warming potential, with the ultimate goal of reducing CO_2 emissions from product usage.

The second is stepping up our involvement in businesses related to smart grids and smart communities. We have installed testing facilities to examine the transmission and distribution networks of 2020 to build-up technologies and expertise in highly reliable and economical electricity systems that are low-carbon, in using energy more rationally by helping users to visualize and control their consumption, and in robust energy infrastructure that can operate seamlessly even in emergency situations. Moreover, our future business strategy calls for a further increase in the efficiency of thermal power generation, promoting the nuclear power business based on the energy policies of each country, and developing equipment and devices that can stabilize electricity systems to accommodate new demand (new electricity systems that use clean sources of energy, such as offshore wind farms, and accommodating Japan-wide electricity supply and demand by connecting power companies).

Our own corporate enhancements to strengthen our constitution focus on important aspects of our core business, including continually reducing the use of energy on a comparatively greater scale through manufacturing and testing, and initiating more in-depth management of chemical substances.

Low power loss turbine generator

Vacuum circuit breaker

Learn more about The Environment and Business on the web
http://www.MitsubishiElectric.com/company/environment/business/

Building Systems Group

The Building Systems Group provides elevators, escalators and building management systems to public-sector and private-sector building owners in more than 90 countries. With Inazawa Works as the central plant, production bases are spread across nine countries.

Proactively Delivering Energy Conservation and Environmental Solutions through Our Elevators and Facima & DIGUARD Systems

Mitsuo Muneyuki
Representative Executive Officer
and Executive Vice President
In Charge of Export Control and Building Systems

In recent years, there has been a sharp increase in demand for elevators and escalators, driven by economic growth and urbanization in China, India and other emerging nations. With society also demanding greater energy-saving performance, the Building Systems Group recognizes that it has a mission to provide safe, energy-efficient, compact and lightweight elevators to customers everywhere. We are rolling out new and more energy-efficient and eco-friendly models as part of our efforts to encourage the shift to our high-speed elevator control devices with full silicon carbide (SiC) semiconductor power modules. In Japan alone there are some 40,000 Mitsubishi Electric elevators that have reached the end of their 25-year service life, meaning demand for renewal will steadily increase both domestically and internationally. For example, an up-to-date renewal of a conventional roped elevator can cut power usage by up to 60%*1. As a result, these new cutting-edge models can play an important role in reducing society's carbon footprint. In order to proactively respond to the needs of making entire buildings more energy-efficient and use less electricity, we have developed new solutions through our Facima*2 & DIGUARD*3 systems for optimizing entire buildings. These systems enable us to reduce power usage without sacrificing user convenience or comfort.

In terms of production, our mother factory, Inazawa Works, has rolled out initiatives aimed at reducing CO_2 emissions from production, curbing the use of chemical substances and promoting greater recycling at each of its sites in Japan and overseas. These initiatives form our commitment to environmentally friendly manufacturing.

*1: Up to 60%: Compared to conventional Mitsubishi Electric control systems. This amount may vary depending on the elevator control system.
*2 Facima: Open integrated management system for building facilities.
*3 DIGUARD: Mitsubishi Electric's total security solution.

NEXIEZ Series – standardized elevators for international markets

Facima BA-system touch, an open integrated management system for building facilities

Electronic Systems Group

The Electronic Systems Group produces satellites and satellite control systems, as well as imaging sensors used in photocopiers and millimeter-wave radar used in automobile safety systems, primarily at two bases in Japan.

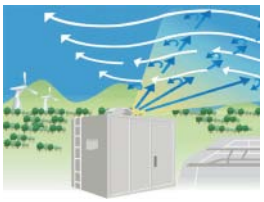
Working to Solve Environmental Problems and Develop Products for Next-Generation Energy Solutions

Takashi Sasakawa
Senior Vice President
In Charge of Electronic Systems

The products of the Electronic Systems Group play a vital role in solving humankind's shared environmental problems and in the development of next-generation energy solutions. For example, the Ibuki satellite (GOSAT) launched in 2009 that we manufactured is being used to observe the concentration distribution of greenhouse gases and to monitor emissions and absorption of these gases, which is helping to prevent global warming. In addition, Himawari 8 and Himawari 9, which are stationary environmental observation satellites planned for launch in 2014 and 2016, respectively, will provide even greater capabilities in monitoring global warming and weather phenomena. As for ground-based solutions, our Doppler Lidar, which can accurately measure winds through our proprietary technology, is contributing to the optimized operations of wind farms, which are important forms of clean energy. Furthermore, as a future initiative, the Electronic Systems Group is conducting research into the commercialization of a space-based photovoltaic array that can deliver stable supplies of electricity 24 hours a day by sending electricity generated in space back to earth using radio waves.

Most precision electronic devices are manufactured in cleanrooms and often require the use of large testing equipment. As such, we have been working to reduce energy consumed during the operation of this equipment. The satellite production building at Kamakura Works, completed in March 2013, has the latest in energy-saving facilities, enabling it to reduce CO_2 emissions by approximately 23% compared to our conventional production methods. Going forward, the group will continue to contribute to the realization of a sustainable society through the development of cutting-edge technologies and products, as well as the optimization of production equipment.

Ibuki satellite



Doppler Lidar

Communication Systems Group

The Communication Systems Group supplies communications infrastructure equipment and surveillance camera systems to customers worldwide including telecommunications carriers, financial institutions and logistics companies. Our two production bases in Japan are working to develop cutting-edge technologies and improve manufacturing efficiency.

Contributing to the Development of Communications Markets and Reducing Environmental Impact through Our Value-Added Systems

Yasuyuki Nakanishi
Executive Officer
In Charge of Communication Systems

ICT networks are key elements of social infrastructure that make advancements in our daily lives and industry possible. Moreover, as ICT devices become more functional and used by larger and larger numbers of people, electricity consumption will also increase rapidly. As a result, the Communication Systems Group is striving to achieve greater energy savings and reduce environmental impacts with a focus on three core themes.

The first is “energy-efficient products.” Here, we are working on energy-efficient designs for optical access systems used in communications infrastructure equipment and communications gateways for service providers.

The second is “achieving energy savings in services provided using our products.” Here, our optical access systems are used in automated meter readers for smart grids, while our communications gateway equipment is starting to be used in HEMS/BEMS to help make it easier to monitor electricity use. We are also working to market our network equipment for M2M services and for obtaining data for demand response programs.

The third is “environmental contributions during installation work.” Here, we are developing digital surveillance cameras that reduce and reuse communications cables.

We are moving forward with a reduction of CO_2 from production, and at our Koriyama Plant, which was damaged in the Great East Japan Earthquake, we rebuilt the manufacturing building as an “eco factory” and reduced CO_2 emissions from the production of our main products by 25% compared to conventional methods.

Going forward, we will further refine our optical and wireless information communication technologies and video surveillance technologies as well as deliver value-added systems to our customers. This will enable us to help develop communications markets around the world and mitigate environmental impacts.

GE-PON ONU customer network terminating unit

Gateway

Living Environment & Digital Media Equipment Group

The Living Environment & Digital Media Equipment Group engages in a wide assortment of businesses, including air conditioning and ventilation systems, hot water heaters, PV systems, lighting, cooking appliances, home appliances and visual equipment. All mass-production bases are domestic and global in scale.

Developing Eco-Friendly Products and Reducing Our Own Environmental Impacts

Hiroyuki Umemura
Executive Officer
In Charge of Living Environment & Digital Media Equipment

The Living Environment & Digital Media Equipment Group recognizes that reducing the environmental impacts of its customers through recycling and energy efficiency will help to enhance the competitiveness of their business activities as well. As a result, we are supplying a broad range of eco-friendly products and services for the home, office and industry, based on our newly launched concept “Smart Quality,” announced in fiscal 2013. These include energy-saving products that reduce CO_2 from usage as well as PV systems that generate renewable energy and do not produce CO_2 during power generation.

In addition, we are moving forward with corporate enhancements to strengthen our constitution with a focus on reducing CO_2 emissions from production and more effectively utilizing resources, which are both key themes under Mitsubishi Electric’s Environmental Vision 2021. We promote energy conservation activities through productivity improvements made with just-in-time activities, and Gunma Works received the Director General’s Prize, the Agency for Natural Resources and Energy, in the Successful Case of Energy Conservation Category of the Energy Conservation Awards in fiscal 2013 for its factory-wide energy-saving activities that helped it achieve a 30% reduction in peak electricity usage. Meanwhile, Mitsubishi Electric Consumer Products (MCP) in Thailand, one of our overseas production sites, received a 2012 ASEAN Energy Award from the ASEAN Centre for Energy for its energy conservation activities. As for our efforts to more effectively utilize resources, we were among the first manufacturers in the industry to set up a recycling plant to recover and recycle used products, in order to establish a sustainable recycling program.

Hybrid Kirigamine

MILIE LED lighting

Factory Automation Systems Group

The Factory Automation Systems Group provides industrial automation products and solutions for customers in the manufacturing sector. Backed by an extensive global engineering, production, sales and service network, the group promotes productivity improvements and energy conservation.

Delivering Devices, Equipment and Solutions that Help Reduce Energy Usage during Production to Customers Around the World

Hideyuki Okubo
Executive Officer
In Charge of Factory Automation Systems

Devices and equipment used in industrial mechatronics are essential to adding value and enhancing the competitiveness of a business through quality and productivity improvements for customers in the manufacturing industry. In recent years, more and more companies want to reduce their environmental impacts across the entire supply chain as well as reduce the total cost of ownership (TCO) through energy savings. As a result, demand is growing for solutions that reduce energy usage from production.

Given this, the Factory Automation Systems Group leverages its control and network technologies from factory automation equipment and measurement technologies from its energy-saving activities in the field of power distribution to deliver the energy solution, "e&eco-F@ctory®," which improves the productivity and reduces energy costs associated with factory production equipment, which consume large amounts of energy. We also utilize this solution in-house as part of our efforts to reduce CO_2 emissions from production.

Furthermore, we are helping to prevent global warming through the launch of transformers compliant with the Japanese "top runner" standards (2nd version), which are highly energy-efficient even when used alone, and a high-performance energy-saving motor that is compliant with the IE3 efficiency rating under the U.S. Energy Independence and Security Act (EISA). Japanese equipment manufacturers are expanding exports following the weakening of the yen against major currencies and demand is growing for energy-efficient solutions in emerging countries where infrastructure development is moving forward. As such, the Factory Automation Systems Group is working to enhance its product development capabilities as well as establish a position as the top global provider of factory automation solutions by promoting productivity and energy-saving solutions around the world.

MELSEC-Q Series
energy measuring unit

Energy-efficient motor
"Superline Premium Series SF-PR"

Automotive Equipment Group

The Automotive Equipment Group offers automotive electronics and car multimedia systems to global customers. Production bases are mass-production factories able to adapt to diverse product specifications. Our three development bases in Japan serve as mother plants for overseas bases.

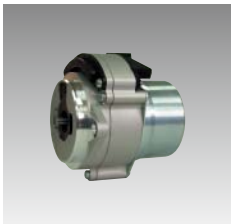
Making Contributions to International Society and the Environment through the Development of Fuel Efficiency Technologies

Yutaka Ohashi
Executive Officer
In Charge of Automotive Equipment

Given people's growing awareness of the environment, the automotive industry recognizes that fuel efficiency technologies represent a key to customer satisfaction and the future of their business. As a result, the Automotive Equipment Group focuses on products that can efficiently draw out energy from the engine and products that use this energy more efficiently to meet society's needs for more fuel-efficient vehicles.

Our electric power steering systems, engine control units and idle stop and start systems are essential for greater vehicle fuel efficiency. Consequently, we are focusing great efforts on the development of value-added versions of these products that are more efficient, have a higher output, and that are more compact and lightweight. Our car navigation systems offer functions to search for the route with the best energy savings and evaluate the extent to which the driver is driving in an eco-friendly manner, aiding overall eco-friendly driving habits. Going forward, we believe our next social mission will be to widely popularize electronic components used in EVs and HEVs.

With local procurement and local production growing globally, we are taking measures to reduce environmental impacts from our production activities and enhance our environmental controls. To that end, we believe it is vital to steadily promote these measures through close collaboration with our mother factory in Japan, including monitoring compliance with environmental laws and regulations covering our activities and products around the world.



Motor and controller for an
electric power steering system

Audio navigation system
"DIATONE SOUND.NAVI"

Semiconductor & Device Group

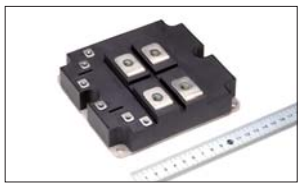
The Semiconductor & Device Group makes power devices, high-frequency devices, optical devices and TFT LCD modules for the information society. Mitsubishi Electric's plants and affiliated companies globally concentrate on the development and manufacture of low power consumption products.

Helping Society Reduce its Carbon Footprint by Providing Low Power Consumption Products

Masaki Sakuyama
Representative Executive Officer and
Executive Vice President
In Charge of Semiconductor & Device

Motors used in home appliances, electric railways and industrial equipment are said to consume approximately 50% of the power used in all of Japan. Inverters represent the key component for minimizing wasted power consumption because they carefully control motor revolutions. The Semiconductor & Device Group provides these inverters along with power conditioners that convert direct-current electricity from photovoltaic systems to alternating-current and power devices (semiconductor devices that control and convert electricity) mounted in power converters used in various power source devices. We are currently working actively on the use and commercialization of next-generation silicon carbide (SiC) power devices because of the drastic reductions in energy usage this material is expected to achieve over conventional silicon. As IT penetrates every facet of our lives and the amount of information communications increases unimpeded, the challenge facing society will be how to make IT more energy-efficient. To solve this challenge and ensure the availability of IT equipment with ultra-low power consumption, the Semiconductor & Device Group provides high-performance, high-efficiency and compact high-frequency devices and optical devices that feature composite semiconductor technologies for use in gigabit wireless communications equipment and optical fiber communications. Our extensive line-up of TFT LCD modules utilize mercury-free white-light LEDs that offer lower power consumption than conventional cold cathode fluorescent lamps (CCFL). These white-light LEDs are being supplied to a broad range of markets, including color TFT LCD modules for industrial applications.

Semiconductor and device manufacturing requires cleanrooms with completely sterile environments that consume large quantities of energy, so we are continually and proactively reducing energy usage with high-efficiency air conditioners and improvements in operations of wafer treatment equipment.



SiC power module

Optical transmission module

Information Systems & Network Service Group

The Information Systems & Network Service Group provides optimal solutions and IT services for social and public systems as well as corporate systems. Operations of the Group are managed by Mitsubishi Electric and four affiliated companies.

Contributing to the Realization of a Low-Carbon Society through the Promotion of Various Green IT Services

Toru Yoshinaga
Executive Officer
In Charge of Information Systems & Network Service

Under the creed “Diamond Solutions – Comfort, Peace of Mind, Development,” the Information Systems & Network Service Group is committed to enhancing customer satisfaction and helping achieve a sustainable society through its solutions tailored to the management strategy and challenges of its customers, as well as its solutions that resolve social issues.

In recent years, we have also been focusing on environmentally effective businesses with green IT, which seeks to reduce environmental impacts through the use of IT. Specifically, we are aggressively expanding our products and services that reduce environmental impacts, such as those that curb power consumption through server integration and consolidation, reduce the need for business travel with video conferencing, and promote paperless work environments through ledger computerization. At the same time, in addition to green IT, we are also strengthening our data center solutions based on rising demand associated with BCP*1. Our cutting-edge proprietary technologies have helped companies to reduce data center power consumption approximately 36%*2 compared to their servers built and operated in-house. Energy-efficient data centers also help companies to reduce CO_2 emissions from their business activities.

Going forward, in order to achieve smarter societies, we will leverage the many elemental technologies and strengths of the Mitsubishi Electric Group to build next-generation information systems using the latest IT solutions, such as M2M*3 and Big Data.

*1 BCP: Business Continuity Plan.
*2 Approximately 36%: Actual value achieved during a project where the user relocated their in-house server to our data center; includes server integration.
*3 M2M (Machine-to-Machine): A computer network where connected equipment mutually exchange information without human involvement, to automatically optimize controls.

Data center

Focusing on Reducing CO_2 Emissions During Production and Product Usage

The 7th Environmental Plan Aims to Expand Contributions to Reducing CO_2 during Product Usage

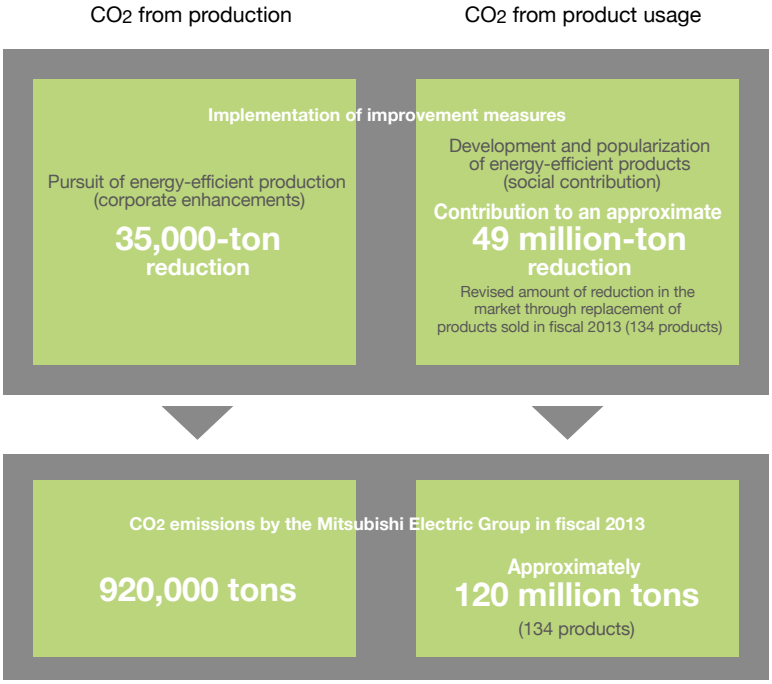
A central pillar of the Mitsubishi Electric Group's Environmental Vision 2021 is the realization of a low-carbon society. In line with this vision, we aim to reduce CO_2 emissions by 30% during production and by 30% during product usage by fiscal 2021.

The 7th Environmental Plan (fiscal 2013-2015) targets reductions in CO_2 emissions during production as with previous plans, and further strengthens initiatives to cut CO_2 emissions from products and services by also focusing on reducing CO_2 emissions during product usage.

The amount of contribution to reducing CO_2 emissions from product usage is defined as the amount of CO_2 reduced as a result of switching from older products (those equivalent to products sold in fiscal 2001) to new, energy-efficient products (those from the fiscal year under review). Increasing our contributions toward this reduction is achieved by improving the energy efficiency of each product, increasing the number of environmentally friendly products and expanding the scope of their sales.

Our contributions to reducing CO_2 from product usage in fiscal 2013 stood at 49.03 million tons across 134 products. Total CO_2 emissions from product usage were 120.34 million tons. To calculate our contributions to reducing CO_2 emissions, we use official standards or calculation methods established by the industry when these are available; when they are not, we establish product usage scenarios on our own to derive the amount of our contributions.

Total Fiscal 2013 CO_2 Emissions by the Mitsubishi Electric Group and the Effects of Our Improvement Initiatives



New Cutting-edge Eco-conscious Plant Equipped with Innovations to Save/Create Energy

When constructing a new plant, the Mitsubishi Electric Group places importance on energy conservation and energy creation. This policy of adopting cutting-edge equipment and technologies that help conserve and create energy was a major driving force behind the construction of a new facility established in June 2012 at the Group's Communication Networks Center, Koriyama Plant (Communication Systems Group), which manufactures video surveillance and other systems.

Certain facilities at the Koriyama Plant required reconstruction after suffering extensive damage as a result of the Great East Japan Earthquake in March 2011. In addition to incorporating every possible energy conservation and creation initiative, the new facility has been designed and constructed to ensure maximum productivity and efficient use of space. These efforts have led to a substantial improvement not only in productivity per employee, but also per unit of floor space.

The revamped Koriyama Plant is projected to achieve cutbacks in electric power consumption exceeding 400,000kWh. Looking ahead, the Plant is expected to provide a model for future energy conservation proposals put to customers.

Photovoltaic Power Generation Panels Covering 80% of Roof Space

Approximately 1,800 panels have been installed on the Plant's roof. Power generation capacity is estimated to be close to 350,000kWh per year. This is further estimated to cover 15% of the Plant's overall power needs.

Photovoltaic power generation panels

Amount of CO_2 emission reduction
150 tons-CO_2/year

Amount of power consumption reduction
350,000 kWh/year

Increasing Air Conditioning Efficiency through Heat Insulation and Systems

We maximize heat insulation through use of heat insulation materials in walls and roofs, and use of double-paned windows with heat-blocking film attached. Systems control air conditioning in line with interior conditions including the presence or absence of people.

Central controller air conditioning operating system

Amount of CO_2 emission reduction
10 tons-CO_2/year

Amount of power consumption reduction
23,700 kWh/year

Introduction of Highly Efficient Equipment

Long-life LED lighting has been adopted throughout the building's interior, with estimated power savings of 11,850kWh per year. Numerous high-efficiency devices have been installed, resulting in a projected 35,100kWh reduction in annual power consumption.

LED lighting

Amount of CO_2 emission reduction
5 tons-CO_2/year

Amount of power consumption reduction
11,850 kWh/year

Transformer

Amount of CO_2 emission reduction
14.8 tons-CO_2/year

Amount of power consumption reduction
35,100 kWh/year

Koriyama Plant

Amount of CO_2 reduction
180 tons-CO_2/year

Amount of power consumption reduction
420,000 kWh/year

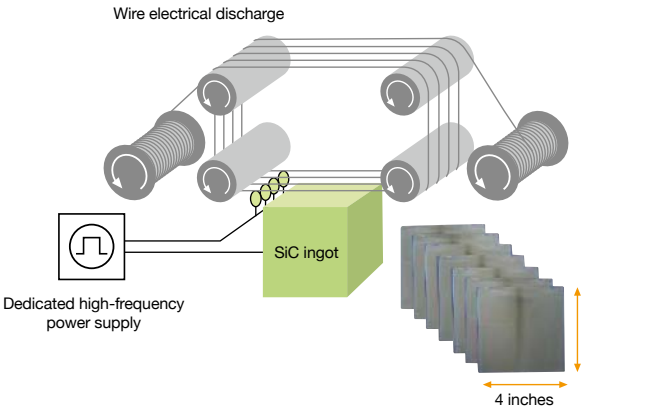
Advancing Development of SiC Power Devices for Higher Performance and Proliferation

The practical application of silicon carbide (SiC) in recent years has improved the energy efficiency and compactness of electronic devices. Mitsubishi Electric's high-capacity full SiC power semiconductor modules, announced in February 2013, boast the world's largest capacity (according to internal survey conducted on February 14, 2013), reducing power loss by approximately 75% compared to the use of silicon, making it applicable to a broader range of uses with high-capacity industrial machinery.

Mitsubishi Electric also announced a new multi-wire electrical discharge slicing technology, which uses a superfine electrode wire to cut semiconductor wafers, and is expected to improve both the productivity of SiC slicing and the effective use of SiC material compared to typical methods using a blade. The higher price of SiC compared to silicon (Si) is considered to be an obstacle to its adoption, but such cost reduction technologies will likely boost its future popularity.

High-capacity full SiC power semiconductor module (rated 1,200V/1,200A)

Multi-Wire Electrical Discharge Slicing Technology



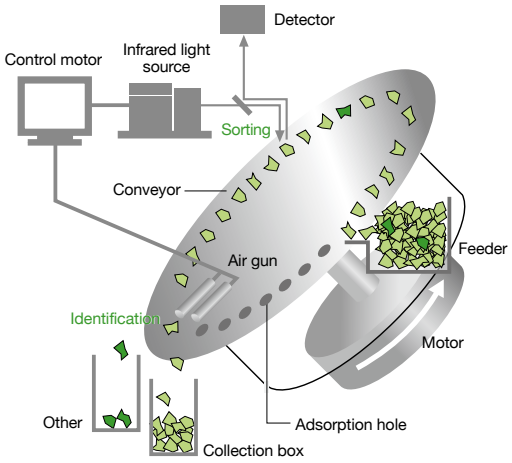
40 sheets of SiC measuring 4 inches (10.16 centimeters) on each side can be sliced at the same time

New Technology to Increase the Efficiency of Plastic Recycling

The Mitsubishi Electric Group has focused on large-scale and high-purity plastic recycling since fiscal 2011. In February 2013, we announced a new plastic identification technology jointly developed with Shimadzu Corporation for high-purity plastic recycling that increases efficiency. This technology can identify types of plastic with an accuracy of 99%, irrespective of pigmentation or additives, by analyzing long-wavelength mid-infrared light that is reflected off of mixed plastic shards from used home appliances. It only takes about one second to identify the type of plastic. Using this technology, it is possible to prescreen the ratio of various types of plastic that should be processed at plants, thereby improving recycling efficiency. Mitsubishi Electric plans to start commercializing this technology in stages from fiscal 2016 onward.

High-precision plastic identification equipment

Illustration of High-Precision Plastic Identification System



Note: Development of this technology was undertaken by Mitsubishi Electric with a grant supporting businesses that develop and commercialize industrial technologies from the Ministry of Economy, Trade and Industry (Japan) in fiscal 2011 (to be used to verify resource recycling systems and develop advanced plastics identification and recycling technologies).

Reducing CO_2 from Production

Starting with the 7th Environmental Plan (fiscal 2013-2015), the Mitsubishi Electric Group manages its reduction targets based on CO_2 emissions per unit of sales*. This facilitates comparisons of the results of our efforts to reduce CO_2 emissions without having to consider increases or decreases in production volume.

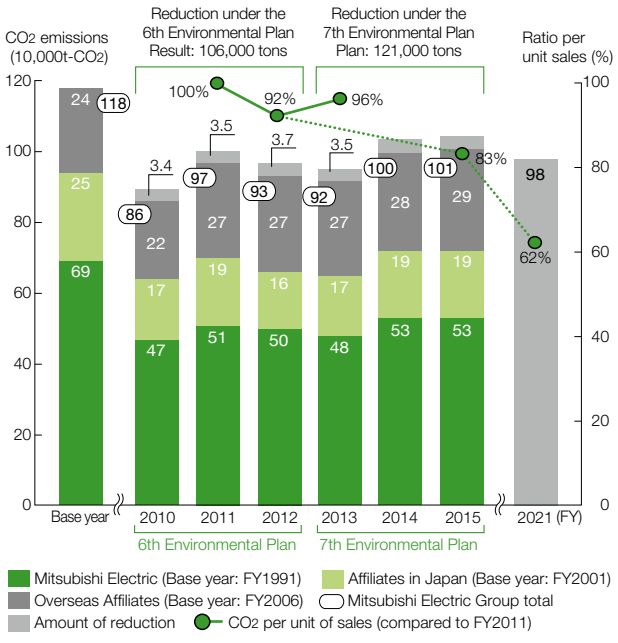
We aim to reduce CO_2 emissions to 83% of the fiscal 2011 level per unit of sales by fiscal 2015. To achieve this, we have begun working to raise the efficiency and performance of air conditioning, lighting and other utility equipment, and to reduce CO_2 from production lines so as to visualize and eliminate hidden energy wastage in production processes. We also undertake activities to reduce CO_2 through demand management, and by installing monitoring systems to manage and control electricity used during peak periods. We also continue to expand photovoltaic energy systems.

In fiscal 2013, we improved CO_2 emissions per unit of sales to 96%, falling short of the 89% target for the fiscal year, due to sales declines in the Electronic Devices Business and the Industrial Automation Systems Business, and new plant construction in the Energy & Electric Systems Business.

In fiscal 2014, we plan to continue activities already underway and conduct activities that focus on use of heat energy to reduce CO_2, while also accelerating the sharing of energy-saving technologies throughout the organization.

*CO_2 per unit of sales: Amount of CO_2 emitted per unit of sales.

Plan to Reduce CO_2 from Production Across the Mitsubishi Electric Group

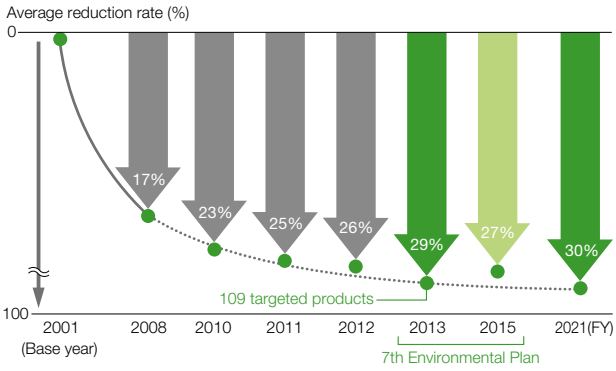


Reducing CO_2 from Product Usage

Raising the energy efficiency of products enables reduction of the CO_2 that accompanies use of the products. The Mitsubishi Electric Group has identified products to be developed under target values for reduced power consumption, and is aiming for a 27% average reduction compared with fiscal 2001 across 84 products under the 7th Environmental Plan.

In fiscal 2013, we expanded the number of these targeted products to 109 and achieved a 29% average reduction, surpassing the target that we had set for the final year of the Plan. We owe this achievement to having improved the CO_2 reduction in almost every product.

Plan for Reducing CO_2 from Product Usage through Improved Energy Efficiency



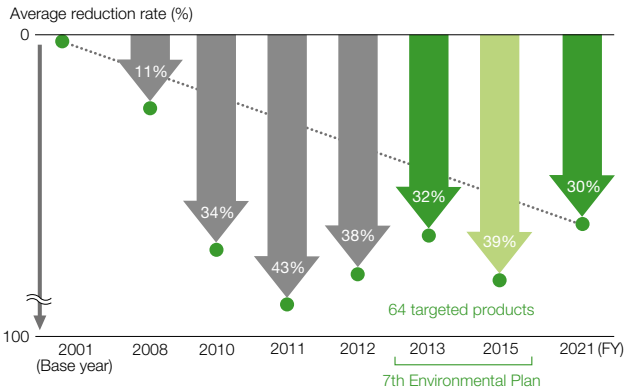
Reducing Resource Inputs and Recycling End-of-Life Products

Mitsubishi Electric is reducing resource inputs through the promotion of product recycling and by designing its products to be more compact and lightweight. The 7th Environmental Plan's target for the final fiscal year (fiscal 2015) is to achieve a 39% average reduction in resource inputs compared with fiscal 2001 across 64 products. The average reduction rate was 32% in fiscal 2013.

The worsening of the index is due to contracting sales of LCD televisions that had buoyed the average reduction rate, and increased sales of products for which structural strength requirements offer little opportunity for resource reduction. However, reduction rates improved steadily for individual products.

In fiscal 2013, Mitsubishi Electric recycled 41,000 tons of four kinds of home appliances (air conditioners; CRT, LCD and plasma televisions; refrigerators/freezers; and washing machines/clothes dryers). Computers and monitors totaled 4,625 units with an average recycle rate of 78%.

Plan for Reduction of Resource Inputs

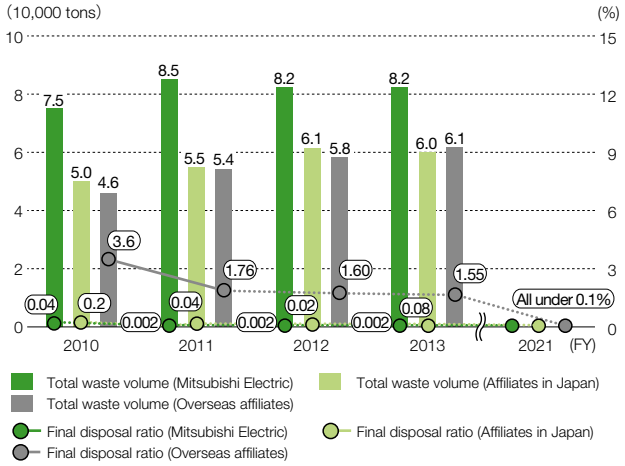


Initiatives to Achieve Zero Final Waste Disposal

The 7th Environmental Plan establishes a final waste disposal ratio target of less than 0.1% for Mitsubishi Electric, less than 0.1% for affiliates in Japan, and less than 1.0% for overseas affiliates for fiscal 2015, the final fiscal year of the plan.

To this end, initiatives implemented according to waste generation and processing conditions at each production site resulted in a final disposal ratio for fiscal 2013 of 0.002% at Mitsubishi Electric and 0.08% at affiliates in Japan. Although the final disposal ratio rose for affiliates in Japan from fiscal 2012, owing to an increase in waste containing asbestos at former facilities, the final disposal ratio was better than the target in both fiscal years. The final disposal ratio was 1.55% at overseas affiliates, short of the target but an improvement from fiscal 2012.

Total Waste Output and Final Disposal Ratio

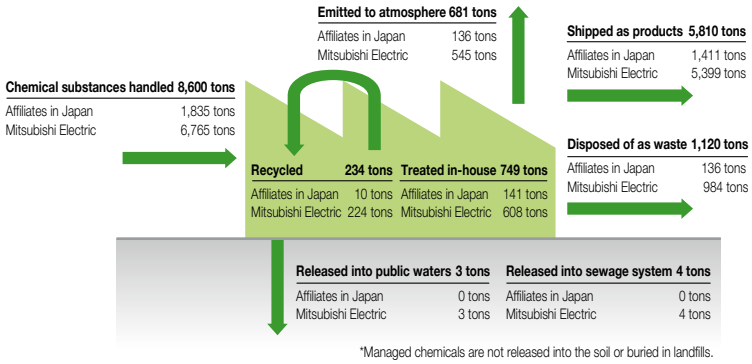


Managing Chemical Substances

In addition to the 462 substances designated under the revised Pollutant Release and Transfer Register (PRTR) law of Japan, Mitsubishi Electric and affiliates in Japan make use of a comprehensive Chemical Substance Management System for voluntary management of 2,615 substances, including refrigerant fluorocarbons used in air conditioners and refrigerators, VOCs (volatile organic compounds) as well as the six RoHS substances.

In fiscal 2013, Mitsubishi Electric used 6,785.6 tons of 137 different chemical substances; affiliates in Japan used 1,835 tons of 48 different substances.

Material Balance of Chemical Substances Subject to Regulation



*Managed chemicals are not released into the soil or buried in landfills.

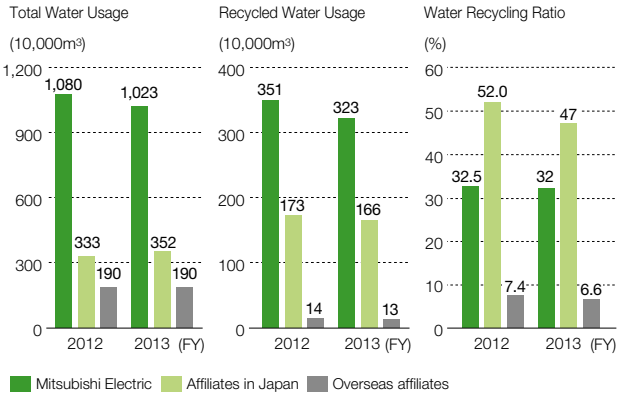
Effective Water Usage

The Mitsubishi Electric Group conserves and recycles water while monitoring its usage at all bases, in order to more effectively use vital water resources, including public water, industrial water and groundwater.

In fiscal 2013, water usage increased compared with the previous fiscal year at affiliates in Japan, but declined at Mitsubishi Electric. At affiliates overseas, water usage was largely unchanged from the previous fiscal year.

Recycled water usage declined at Mitsubishi Electric, affiliates in Japan and affiliates overseas.

Total Water Usage, Recycled Water Usage, Water Recycling Ratio

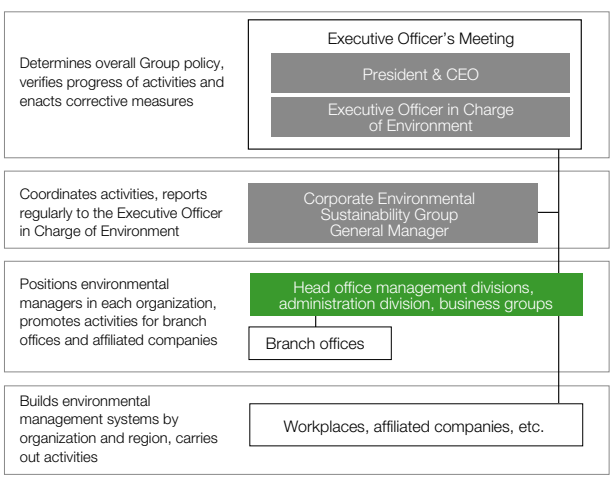


Environmental Management

The Mitsubishi Electric Group aims to establish a uniformly high level of quality in environmental management across all organizations within the Mitsubishi Electric Group of companies, and to make continuous improvements accordingly.

Environmental governance and corporate governance are key links in the business management of the Mitsubishi Electric Group, and are applicable to the company, its consolidated subsidiaries and its affiliated companies. All levels of the organization — from head office, management divisions to administration divisions, business groups, branch offices, workplaces and affiliated companies — work within the scope of their responsibilities to ensure due execution of environmental conservation activities, through the establishment of a system to manage and monitor the plans, progress and environmental performance of each downstream organization.

Environmental Management Promotion Structure



Performance Data

Period: April 1, 2012 - March 31, 2013
Scope of Data Compilation: Mitsubishi Electric Corporation, 116 affiliates in Japan and 72 overseas affiliates (total of 189 companies)

* Up to fiscal 2009, the scope of our report was limited to those companies that had drawn up an environmental plan for governance from an environmental conservation perspective. However, under the policy of expanding global environmental management, we have broadened the scope of the report to cover Mitsubishi Electric, and consolidated subsidiaries, and its affiliated companies.

IN

Factory

Materials for Manufacturing

	Mitsubishi Electric	Affiliates (Japan)	Affiliates (Overseas)
Materials [1]	320,000 tons	130,000 tons	320,000 tons

Manufacturing

		Mitsubishi Electric	Affiliates (Japan)	Affiliates (Overseas)
Electricity		980 million kWh	330 million kWh	330 million kWh
Natural gas		22,320,000 m^3	1,860,000 m^3	11,640,000 m^3
LPG		1,813 tons	2,363 tons	686 tons
Oil (crude oil equivalent)		6,444 kl	3,227 kl	2,032 kl
Water		6,990,000 m^3	1,850,000 m^3	1,780,000 m^3
	Public water	1,240,000 m^3	430,000 m^3	460,000 m^3
	Industrial water	2,110,000 m^3	290,000 m^3	1,100,000 m^3
	Groundwater	3,640,000 m^3	1,130,000 m^3	30,000 m^3
	Others	0 m^3	0 m^3	190,000 m^3
Reuse of water		3,230,000 m^3	1,660,000 m^3	130,000 m^3
Controlled chemical substances (amounts handled)		6,786 tons	1,835 tons	2,212 tons
Ozone depleting substances (amounts handled)		1.4 tons	165 tons	913 tons
Greenhouse gases (amounts handled)		3,141 tons	52 tons	693 tons
Volatile organic compounds (amounts handled)		1,348 tons	1,397 tons	219 tons

[1] Materials: Sum of shipping weight of "Design for the Environment" (DfE) products, plus amount of product packaging materials used, plus total amount of waste.

OUT

Emissions (From Manufacturing)

		Mitsubishi Electric	Affiliates (Japan)	Affiliates (Overseas)
Discharge into water	Water	6,240,000 m^3	1,200,000 m^3	1,100,000 m^3
	Controlled chemical substances	7.0 tons	0.0 tons	40.9 tons
	BOD (biological oxygen demand)	106.5 tons	3.3 tons	17.7 tons
	COD (chemical oxygen demand)	17.8 tons	3.6 tons	42.0 tons
	Nitrogen	74.5 tons	14.7 tons	1.6 tons
	Phosphorus	5.9 tons	0.2 tons	0.2 tons
	Suspended solids	74.3 tons	5.8 tons	23.6 tons
	n-hexane extracts (mineral)	0.9 tons	0.2 tons	1.1 tons
	n-hexane extracts (active)	4.4 tons	0.1 tons	0.2 tons
	Total emissions of zinc	0.3 tons	0.0 tons	0.1 tons
Emissions into the atmosphere	Carbon dioxide (CO_2)	481,000 tons-CO_2	167,000 tons-CO_2	269,000 tons-CO_2
	Controlled chemical substances (excluding amounts contained in other waste)	545.3 tons	136.0 tons	232.6 tons
	Ozone depleting substances	0.0 ODP tons	0.0 ODP tons	0.7 ODP tons
	Greenhouse gases	86,000 tons-CO_2	44,000 tons-CO_2	66,000 tons-CO_2
	Volatile organic compounds	532.9 tons	275.0 tons	25.0 tons
	Sulfur oxide (SOx)	1.3 tons	0.6 tons	4.9 tons
	Nitrogen oxide (NOx)	9.1 tons	53.4 tons	8.0 tons
	Fly ash	0.9 tons	1.3 tons	18.8 tons
Amount of fluorocarbon recovered		1.9 tons	237.0 tons	—

Waste

	Mitsubishi Electric	Affiliates (Japan)	Affiliates (Overseas)
Total waste emissions	82,536 tons	60,432 tons	60,643 tons
Amount recycled	72,006 tons	49,830 tons	58,445 tons
Waste treatment subcontracted out	40,917tons	39,884 tons	59,388 tons
Final disposal	1 tons	46 tons	943 tons
In-house weight reduction	3 tons	0 tons	142 tons

Products [2]

	Mitsubishi Electric	Affiliates (Japan)	Affiliates (Overseas)
Weight of all "DfE" sold	186,000 tons	60,000 tons	220,000 tons
Weight of packaging materials	47,000 tons	7,000 tons	40,000 tons

[2] Products: Weight related to "Design for the Environment" (DfE) products.

Logistics

Sales and Logistics [3]

	Mitsubishi Electric	Affiliates (Japan)	Affiliates (Overseas)
Fuel for trucks (gasoline)	11,659 kl	1,758 kl	264 kl
Fuel for trucks (diesel)	25,090 kl	5,035 kl	19,674 kl
Fuel for rail (electricity)	2,198 MWh	518 MWh	0 MWh
Fuel for marine transport (bunker oil)	355 kl	0 kl	52,987 kl
Fuel for air transport (jet fuel)	507 kl	124 kl	16,448 kl

[3] Sales and logistics: Includes 11 sales companies in Japan.
Figures for overseas affiliated companies include transportation between countries.

Emissions [4]

	Mitsubishi Electric	Affiliates (Japan)	Affiliates (Overseas)
Carbon dioxide (CO_2)	95,000 tons-CO_2	18,000 tons-CO_2	247,000 tons-CO_2

[4] Emissions: Includes 11 sales companies in Japan.
Figures for overseas affiliated companies include transportation between countries.

Products (Customer)

Energy Consumption

	Mitsubishi Electric	Affiliates (Japan)	Affiliates (Overseas)
Amount of energy consumption of 134 products targeted for contribution in reducing CO_2 emissions from product usage	290,400 million kWh	7,000 million kWh	3,500 million kWh

Emissions

	Mitsubishi Electric	Affiliates (Japan)	Affiliates (Overseas)
Amount of CO_2 emissions of 134 products targeted for contribution in reducing CO_2 emissions from product usage	122,550,000 tons-CO_2	2,950,000 tons-CO_2	1,480,000 tons-CO_2

Recycle

End-of-Life Products [5]

	Mitsubishi Electric
Air conditioners	13,624 tons
Televisions	5,087 tons
Refrigerators	21,403 tons
Washing machines/ Clothes dryers	7,555 tons
Personal computers	41 tons

[5] End-of-Life Products: Weight of products taken back and weight of recovered resources of four types of appliances subject to Japan's Home Appliance Recycling Law, plus personal computers.

Resources Recovered [6]

	Mitsubishi Electric
Metals	27,649 tons
Glass	2,055 tons
Fluorocarbon	284 tons
Others	11,769 tons

[6] Resources Recovered: Weight of products taken back and weight of recovered resources of four types of appliances subject to Japan's Home Appliance Recycling Law, plus personal computers.

Environmental Accounting

Period: April 1, 2012 - March 31, 2013
Scope of Data Compilation: Mitsubishi Electric Corporation, 116 affiliates in Japan and 72 overseas affiliates (total of 189 companies)

Environmental Conservation Costs

□ Mitsubishi Electric Group ▒ Mitsubishi Electric (100 million yen)

Item	Capital Investment	Cost[1]	Year-on-Year Change	Main Costs
Business area activities	45.8	100.4	1.1	
	32.5	67.9	3.3	
Pollution prevention	2.6	23.2	(3.6)	Maintenance of wastewater treatment facilities and exhaust treatment facilities, water quality survey costs, chemicals for maintenance and inspection of specific facilities (septic tanks), etc.
	0.6	15.5	(1.6)	
Global environmental conservation	43.0	47.3	2.8	Upgrading of air conditioners, installation of LED lighting and PV systems
	31.9	33.2	2.4	
Resource recycling	0.2	29.8	1.9	Recycling of saleable materials
	0.0	19.2	2.6	
Upstream and downstream from production	0.6	9.8	3.5	Green Accreditation questionnaire survey, acquisition of non-inclusion certificates for chemical substances, EU REACH compliance survey
	0.3	7.8	4.0	
Management activities	0.0	30.3	1.8	Maintenance of ISO 14001 certification, education for new employees, PRTR, waste management system usage fees
	0.0	24.0	1.3	
R&D activities	0.3	36.8	(0.7)	Activities related to refrigerant development, smart grid/HEMS/BEMS development, high-purity plastic recycling technology, energy efficiency, weight reduction, etc.
	0.3	34.9	0.8	
Community activities	0.0	0.3	(0.0)	Station-to-Workplace Clean Campaign, Groundwater Resource Fund, Mitsubishi Electric Outdoor Classroom, Satoyama woodland preservation activities
	0.0	0.2	(0.0)	
Environmental damage	0.0	3.0	2.0	Installation of ground water purification equipment and analysis, etc.
	0.0	3.0	2.0	
Total of consolidated	46.8	180.6	7.8	
Total of non-consolidated	33.0	137.7	11.4	

[1] Includes depreciation of capital investment over the past five years.

Environmental Conservation Benefits (Environmental Performance)

Item	Unit	Fiscal 2012	Year-on-Year Change	Year-on-Year Per Net Sales
Total energy used	10,000 GJ	1,842	(74)	98%
		1,091	(97)	96%
Total water used	10,000 m³	1,062	(2)	102%
		699	(29)	101%
Total greenhouse gas emissions	10,000 tons-CO_2	111	(6)	97%
		57	(6)	95%
CO_2 (Energy consumption)	10,000 tons-CO_2	92	(2)	100%
		48	(2)	100%
HFC, PFC, SF_6	10,000 tons-CO_2	20	(5)	82%
		9	(3)	76%
Total releases and transfers of chemical substances into the atmosphere	tons	833	(53)	96%
		533	(8)	103%
Total wastewater discharged	10,000 m³	854	(69)	94%
		624	(39)	99%
Total releases and transfers of chemical substances into the water and soil	tons	48	(1)	99%
		7	(1)	97%
Total waste discharged	tons	203,611	9,355	107%
		82,536	344	105%
Final disposal	tons	991	46	107%
		1	(0)	86%

Economic Benefits from Environmental Conservation Activities (Real Benefits)

Item	Amount	Year-on-Year Change	Main Benefits
Earnings	42.7	7.5	Cost of selling the saleable materials resulting from recycling of scrap metal, etc.
	14.7	(1.6)	
Savings	40.1	(194.1)	Reduction in electricity costs from installation of PV systems and energy-saving air conditioning equipment and lighting fixtures; reduction in the use of packaging and of manufactured items to be used in products, etc., through a shift to returnable items
	24.3	(66.2)	
Total	82.8	(186.6)	
	39.1	(67.8)	

Economic Benefits from Environmental Consideration in Products and Services

Item	Amount	Main Products
Economic benefits to customers	19,611	PV systems; heat-pump water heater systems; room air conditioners; Lossnay total heat exchange ventilator fans; refrigerators; LCD display monitors; turbine generators; monitoring, preservation and control equipment for thermoelectric generation and in-house power plants; backbone optical transmission systems; optical/wireless access systems
	19,227	

Corporate Profile (as of March 31, 2013)

Company Name: Mitsubishi Electric Corporation

Head Office Location:
Tokyo Building, 2-7-3, Marunouchi, Chiyoda-ku, Tokyo 100-8310, Japan

Established: January 15, 1921

Paid-in Capital: ¥175,800 million

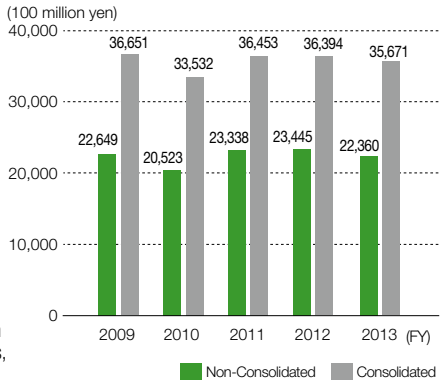
President: Kenichiro Yamanishi

Number of Employees:
Consolidated 120,958
Non-consolidated 29,394

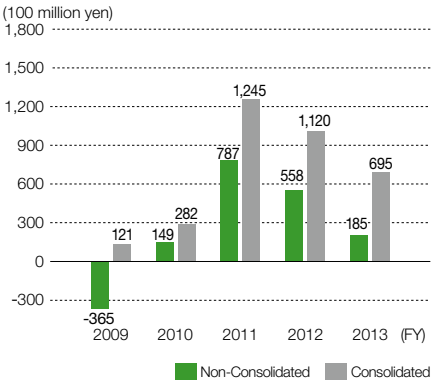
Number of Affiliated Companies:
Subsidiaries 162 Affiliates 39

Business Segments:
Energy and Electric Systems, Industrial Automation Systems, Information and Communication Systems, Electronic Devices, Home Appliances, Others

Net Sales



Net Income



Mitsubishi Electric Group Environmental Information

Mitsubishi Electric's global website contains information about the Mitsubishi Electric Group's activities related to corporate social responsibility (CSR).

http://www.MitsubishiElectric.com/company/environment/

From the President

A message from President & CEO Kenichiro Yamanishi about the Mitsubishi Electric Group's environmental initiatives.

http://www.MitsubishiElectric.com/company/environment/message/

Basic Policy and Approach to Environmental Management

We present the entire picture of our environmental management, such as our policies and vision for becoming a global leading green company.

http://www.MitsubishiElectric.com/company/environment/policy/

Environmental Report 2013

A report on our environmental efforts and achievements in fiscal 2013, and an overview of the 7th Environmental Plan (fiscal 2013–2015).

http://www.MitsubishiElectric.com/company/environment/report/

The Environment and Business

We introduce detailed information about environmental-based social contributions and corporate enhancements through our products and services.

http://www.MitsubishiElectric.com/company/environment/business/

Environmental Statement: Eco Changes

Eco Changes is our environmental statement, and expresses the Group's stance on environmental management. Through a wide range of businesses for homes, offices, factories, infrastructure and even outer space, we are helping contribute to the realization of a sustainable society.

http://www.MitsubishiElectric.com/eco/ecochanges/

eco Changes

for a greener tomorrow

Global Environmental Portal

Provides information about environmental initiatives by Mitsubishi Electric Group companies around the world.

http://www.MitsubishiElectric.com/eco/

MITSUBISHI ELECTRIC CORPORATION

http://www.MitsubishiElectric.com

Inquiries Corporate Environmental Sustainability Group
Tokyo Building 2-7-3, Marunouchi, Chiyoda-ku, Tokyo 100-8310, Japan
TEL: +81-3-3218-9024 FAX: +81-3-3218-2465
E-mail: eqd.eco@pj.MitsubishiElectric.co.jp

VEGETABLE OIL INK

Published in September 2013

X-X01-3-C9260-B HQ1309 (MDOC)