

SANYO DENKI

Environmental data book 2020

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# Message from the Major Operating Officer

## A Company that Contributes to Society

Based on our corporate philosophy of “aiming to help all people achieve happiness,” the SANYO DENKI Group focuses on three technical themes: “technology protecting the global environment,” “technology protecting human health and safety” and “technology utilizing new energy and energy conservation.” The Group engages in product development in accordance with these technical themes.

SANYO DENKI product development is distinctive for its “relevance to the market” and “customization tailored to individual equipment.” The market environment surrounding our products is changing dramatically and the speed of these changes is accelerating. Even in this environment, we respond flexibly to changes and deliver the most suitable products to our customers in accordance with prevailing conditions.

In developing products, we constantly strive for “industry-leading performance.” This is now a basic policy, but in the past, there were times when product development was conducted with an emphasis on sales volume. The turning point came in the 1990s. The cooling fan market in the 1990s was dominated by mass production driven by demand for personal computers. For SANYO DENKI, fan production demand also increased, leading to the construction of our Philippines factory.

The growth in global demand for fans positioned the Group for global expansion, but application characteristics made this a difficult market in which to differentiate products on the basis of performance. As a result, competition intensified and problems arose as we became involved in a price war.

Based on this experience, the Group adopted a strategy whereby the highest priority was placed on the qualities of performance, function and product quality in product development. To improve quality, stronger technologies are required, but this does not mean more complex designs, but rather, an extremely simple approach. However, to achieve this requires a high degree of technical expertise and the continuous propagation of this expertise is crucial. The results lead to product differentiation and the maintenance of high-performance quality. At SANYO DENKI, we strive to become the industry leader in each of our technologies to maintain and enhance these qualities.

The goal of the SANYO DENKI Group is the development of new technologies and products aimed at helping all people to achieve happiness. The industry-leading products we develop improve the performance of our customers’ equipment as well as contribute to energy conservation and environmental protection. Based on the idea that our ongoing development of excellent products itself leads to social contributions, we will further strive to develop products as a company that achieves continuous growth and contributes to society.



Representative Director  
President and Chief Operating Officer

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## Scope of the report

Organizations covered by the report: The Head Office, the Technology Center and factories in Japan (Kangawa Works, Shioda Works and Fujiyama Works)

Period: Fiscal 2019 (from April 1, 2019 through March 31, 2020, in principle)



# Environmental Policy and Environmental Management System

## Environmental Policy

### Basic Philosophy

SANYO DENKI helps preserve the global environment and enhance humanity's prosperity through its corporate activities for society and the environment.

### Basic Policy

SANYO DENKI CO., LTD., comprising Kangawa Works, Shioda Works, Fujiyama Works, Technology Center and Head Office, develops, designs, manufactures and sells cooling fans, UPS, power conditioners for photovoltaic generation system, engine generators, servo systems, stepping systems, controllers, encoders, and driving devices. Under the principles listed below, each member of SANYO DENKI will take part in eco-friendly activities to help preserve our abundant global environment.

1. To enhance our environmental performance, we will continuously improve the environmental management system and work hard to prevent pollution and reduce the environmental impact of our activities.
2. We will assess the environmental impact of our corporate activities and focus on our environmental targets. We will also deal with the following as high-priority themes for environmental management.
  - (1) Develop, design, manufacture, and sell environment-friendly products
  - (2) Reduce or eliminate the use of hazardous chemicals
  - (3) Reduce the environmental impact (energy consumption, number of copies, waste, etc.) of business activities
  - (4) Contribute to the local community
  - (5) Protect biodiversity and ecosystem
3. We observe environmental laws, restrictions and other rules relevant to our company and work hard for environmental preservation.
4. We document, carry out and maintain our environmental principles, make them known to all our employees, and ask that our employees both cooperate in the pursuit of these principles and reflect them in our environmental management.
5. We will review the environmental management system periodically.
6. We will openly publicize the environmental principles to parties in and outside the company.

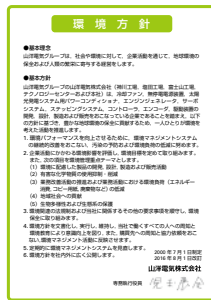


# System

It has been 20 years since the Environmental Committee was established in April 2000. The committee has been working to maintain a level of energy saving and waste reduction in sites since fiscal 2004. In addition to reducing environmental burdens, the committee is also striving to reduce the volume of hazardous chemical substances and develop Eco-products to achieve its major environmental management goals.

## Major Responsibilities of the Environmental Committee

1. Formulation of policies on environmental conservation activities, and reporting and instructions on the same
2. Formulation and enforcement of company rules and procedures (including company-wide environmental manuals) concerning environmental conservation activities
3. Promotion of environmental conservation activities at the head office, factories and branch offices through those in charge of environmental management
4. External contacts concerning company-wide environmental conservation activities
5. Surveys on social situations relating to environmental conservation activities

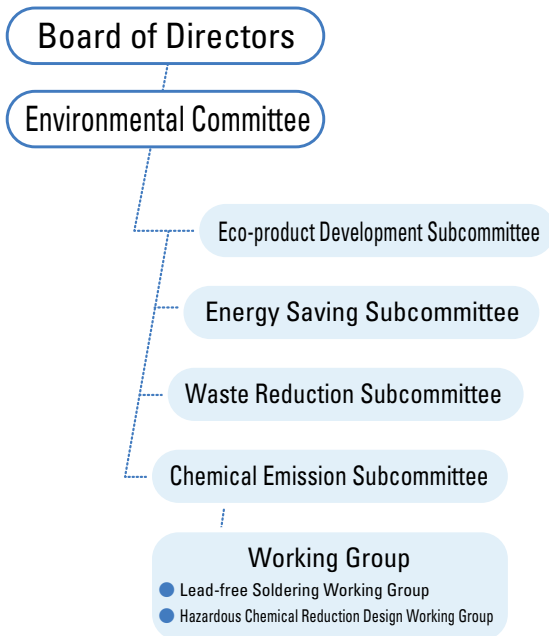


Environmental Policy Brochure

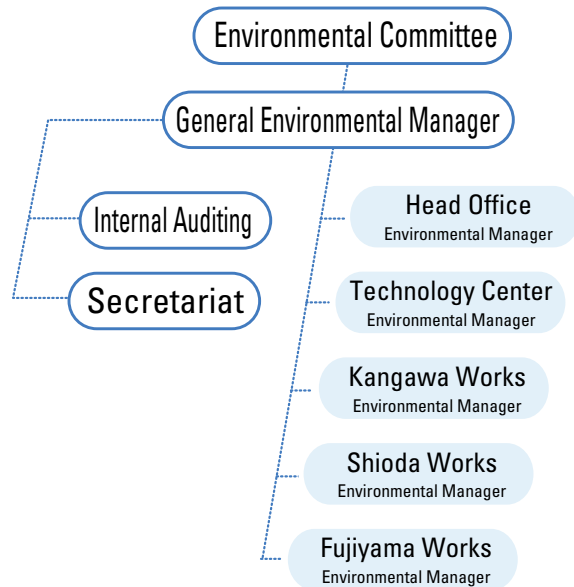


Environmental Committee

## Positions within the Environmental Committee and Its Structure



## Organization Chart for the Environmental Management System



### ○ Eco-product Development Subcommittee

It promotes the development of competitive products designed to protect the environment in accordance with eco-design standards.

### ○ Energy Saving Subcommittee

It promotes energy saving through its daily activities the EMS (environmental management system). It also formulates long-term energy-saving strategies and proposes cost-effective investments.

### ○ Waste Reduction Subcommittee

It works to reduce waste and disposal costs and achieve zero emissions.

### ○ Chemical Emission Reduction Subcommittee

It strives to reduce emissions of hazardous chemical substances and minimize environmental pollution via self-management. It also works to promote the use of lead-free soldering and lead-free electric wires, reduce hazardous chemical substances, and develop measures for the PRTR (pollutant release and transfer register).

# Activity Report and Goals

Activity		Fiscal 2019		Fiscal 2020	Fiscal 2021
		Goal	Track record	Goal	Goal
Promotion of eco-design		Creation of Eco-products	Twenty seven new products certified as Eco-products	Creation of Eco-products	Creation of Eco-products
Sales ratio of Eco-products (by business division)	Coolong Systems Division	45 %	45 %	46 %	47 %
	Power Systems Division	31 %	37 %	32 %	33 %
	Servo Systems Division	37 %	38 %	38 %	39 %
Reduction of hazardous chemical substances		Use of lead-free soldering Development of products with reduced amounts of RoHS-6 hazardous substances Reduction of substances defined in the PRTR Law	The rate of lead-free solder usage is nearly 100% and we will maintain this level moving forward. The RoHS-10 hazardous substance directive: all models of cooling fans are compliant. Other products are being replaced as necessary.	Promotion of the use of lead-free solder Implementation of measures to meet the RoHS & REACH standards Reduction of PRTR-controlled substances	
Reduction in power consumption	Kangawa Works	7 %	25 %	Reduction by 10% compared to fiscal 2010	Reduction by 11% compared to fiscal 2010
	Shioda Works	54 %	67 %		
	Fujiyama Works	(7 %)	(4 %)		
	Technology Center	12 %	21 %		
	Head Office	10 %	21 %		
Reduction in fuel consumption	A-type heavy oil *Total of the Shioda and Fujiyama Works	83kl 68 %	75kl 71 %	Consumption of LPG (Technology Center) Maintain at the fiscal 2010 level	
	LPG *Total of the the Technology Center	42,000Nm <sup>3</sup> (5 %)	34,600Nm <sup>3</sup> 13 %	Consumption of LPG (Fujiyama Works) Maintaining it at the current level (increased by 24% compared to fiscal 2018)	
	Town gas * Total of the the Kangawa Works	800,000m <sup>3</sup> 3 %	611,400m <sup>3</sup> 26 %	Consumption of A-type heavy oil Maintaining it at the current level (reduced by 40% compared to fiscal 2010)	
	LPG *Total of the Fujiyama Works	88,000m <sup>3</sup> (24 %)	101,400m <sup>3</sup> (43 %)	Consumption of town gas (reduced by 3% compared to fiscal 2018)	
Reduction in the use of copy paper	Kangawa Works	18 %	36 %	Maintaining it at the current level (reduced by 19% compared to fiscal 2010)	
	Shioda Works	85 %	86 %		
	Fujiyama Works	(11 %)	(6 %)		
	Technology Center	19 %	24 %		
	Head Office	12 %	26 %		
Reduction of waste	Kangawa Works	(2 %)	38 %	Maintaining it at the current level (reduced by 14% compared to fiscal 2010)	
	Shioda Works	96 %	93 %		
	Fujiyama Works	9 %	2 %		
	Technology Center	9 %	23 %		
	Head Office	35 %	41 %		
Contribution to local communities		Head Office, Technology Center, Cleaning of areas around the factories conducted at least once every month	Goal achieved	Cleaning of the area around sites at least once every month Participation in environment-related events	
Promotion of zero emission	Company-wide waste recycling rate	99.6 % or higher	99.7 %	99.6 % or higher	

Note:1 Reduction rates for town gas and LPG used at Fujiyama Works have been calculated using fiscal 2018 as a base year. Fiscal 2010 was used as a base year for all other reduction rates.

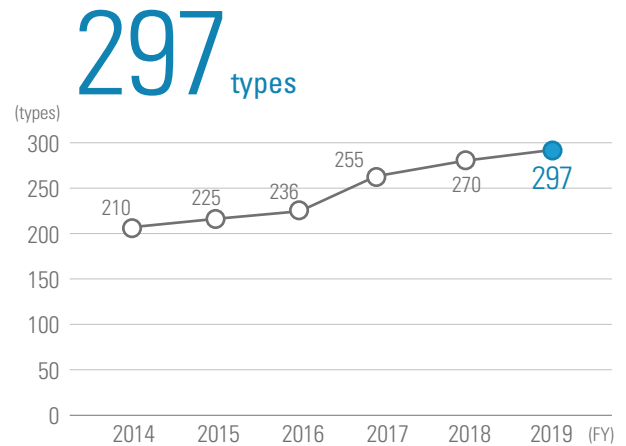
# Product Development

## Eco-products

### Efforts for designing Eco-products

As for product design, we are carrying out R&D to incorporate the latest energy-saving technologies into our new products. At the same time, we carry out product assessments to evaluate the environmental impact of products at each stage, such as component and material procurement, manufacture, distribution, use, recycling, and disposal. Newly developed products are compared with commercially available and existing products and are certified as Eco-products (Eco-design products) if they satisfy the specified evaluation standards. In fiscal 2019, 27 types of products were certified as Eco-products, bringing the total to 297. We will continue to promote the LCA-based development of products designed to reduce CO<sub>2</sub> emitted during their use and to be eco-friendly.

Number of products certified as eco-products  
(Total number of products in all divisions)



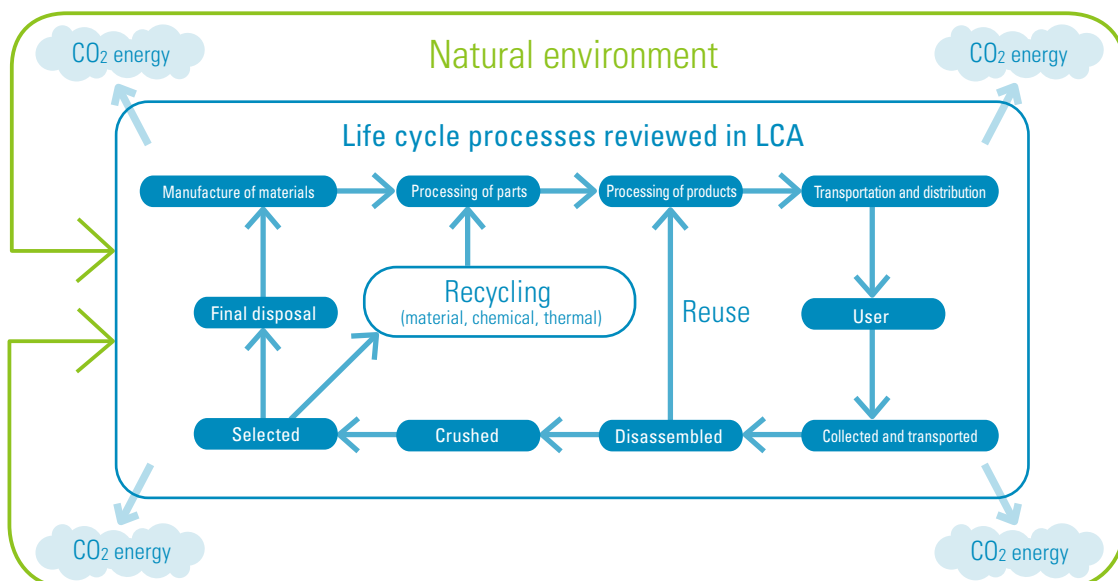
### Life cycle assessment (LCA)

LCA is one of the techniques used to provide a general quantitative measure of levels of environmental impact including global warming that products have through their life cycles. We evaluate the environmental compatibility of a product using this method. Our rate of implementing LCA in our Eco-products was 90% in fiscal 2019.



Eco-products are presented in catalogues and other materials with a LEAF symbol.

### Life Cycle Processes Reviewed in LCA



Effects on the natural environment (global warming) are assessed at each stage of the life cycle, based on energy consumption and the amount of CO<sub>2</sub> emissions.

# Product Development

## Eco-products of Fiscal 2019

### Results of LCA

27 new Eco-products were developed in fiscal 2019. The results are based on a comparison of the amounts of CO<sub>2</sub> emitted during the time of use between newly developed models and their immediate predecessors. Since these products are used for a long time, the reduction of CO<sub>2</sub> emitted during the time of use will be effective in preventing global warming.



CO<sub>2</sub> emissions

**39%** ↓

Models used for LCA comparison

New model : KA511XXX

Conventional model : T511-012

## Energy Saving

### Specific Energy-Saving Measures

As a countermeasure against global warming, we consider the restriction of CO<sub>2</sub> emissions through energy-saving activities as our top priority task, and are promoting the improvement of energy use efficiency and energy saving activities. Compared to the previous year, energy consumption and CO<sub>2</sub> emissions decreased along with production volume. Energy consumption per unit of production rose slightly year on year.

### Results of Introduction

- Added a 300kW photovoltaic generation system at Kangawa Works
- Implemented quantity control for hot water boilers used in heating systems at Kangawa Works



The roof of Kangawa Works before the installation of the photovoltaic generation system



The roof of Kangawa Works after the installation of the photovoltaic generation system

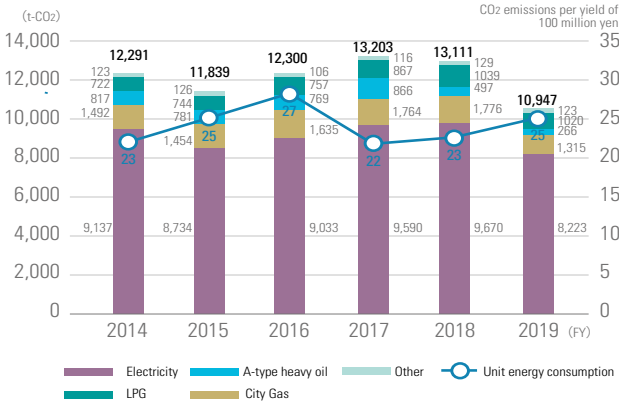


PV inverters at Kangawa Works

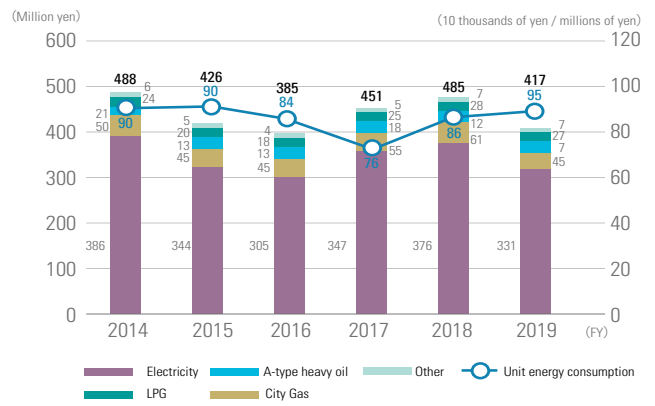


# Energy Saving

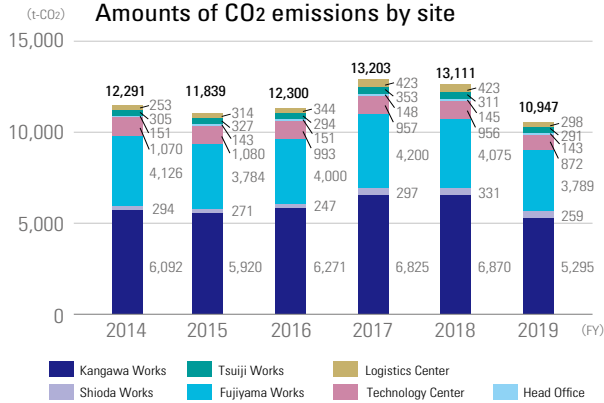
Energy consumption measured in terms of the amount of CO<sub>2</sub>



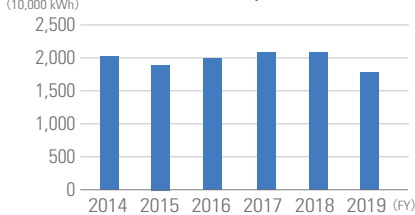
Consumption value per production value



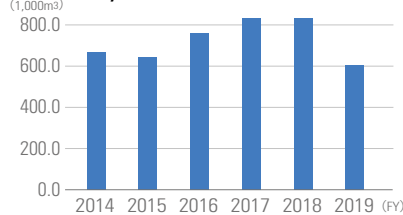
Amounts of CO<sub>2</sub> emissions by site



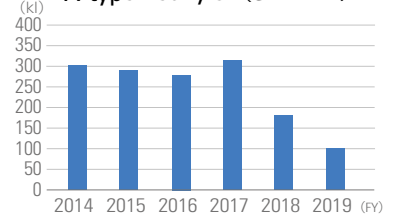
Power consumption



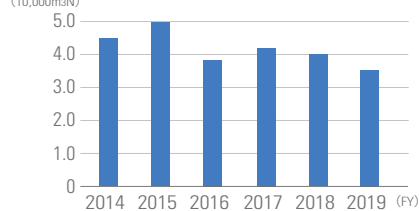
City Gas (KW)



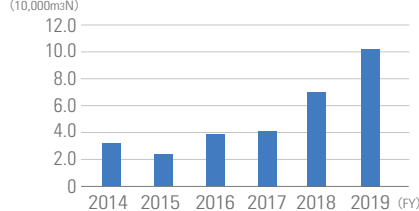
A-type heavy oil (SW+FW) (kl)



LPG (TC) (10,000 m³N)



LPG (FW) (10,000 m³N)



# Energy Saving

## Energy Saving Measures Implemented in Manufacturing Processes at Factories

Works	Measures	Effects
Kangawa Works	<ol style="list-style-type: none"> <li>(1) Unnecessary warehouse and equipment lighting is turned off</li> <li>(2) Promoting electricity savings when equipment is in standby status</li> <li>(3) Promoting the use of solar power</li> <li>(4) Promoted electric power conservation by introducing energy-saving equipment.</li> </ol>	<ol style="list-style-type: none"> <li>(1) Saving electricity by limiting the amount of lighting</li> <li>(2) Reduction in commercial electricity by powering equipment down to power saving mode when materials are out or when equipment is not in use</li> <li>(3) Savings in commercial power use</li> <li>(4) Reduced commercial power through optimal condition operations.</li> </ol>
Shioda Works	<ol style="list-style-type: none"> <li>(1) Affixing calendar timers to machines</li> <li>(2) Promoted production equipment revisions and automation.</li> <li>(3) Systematic operation of boilers according to weekly calendar timers</li> </ol>	<ol style="list-style-type: none"> <li>(1) Savings in electricity by preventing switches from being left on</li> <li>(2) Improved productivity, conserved electric power.</li> <li>(3) Control of the use of A-type heavy oil</li> </ol>
Fujiyama Works	<ol style="list-style-type: none"> <li>(1) Adjusting the operating hours of air conditioners</li> <li>(2) Shifting the operating hours of production equipment</li> <li>(3) Adjusting the operating hours of loading equipment for tests</li> <li>(4) Promoting the use of solar power</li> </ol>	<ol style="list-style-type: none"> <li>(1) Energy savings through reduced operating hours and reduced the use of heavy oil A.</li> <li>(2) Savings in commercial power</li> <li>(3) Savings in electricity by reviewing the test run time</li> <li>(4) Savings in commercial power</li> </ol>



Solar panels at Kangawa Works



Solar panels at Logistics Center



Solar panels at Fujiyama Works



PV Inverters at Fujiyama Works

## Transportation

Our company is using vehicles that comply with the regulations on diesel car exhaust in seven municipal communities to transport supplies between factories. A company-wide "Stop Idling" campaign is also under way, in order to reduce the environmental burden.



Signboard for stop idling



Electric vehicles



Vehicle that complies with the regulations on diesel car exhaust

# Reuse & Recycling

## Zero-emission Activities

In fiscal 2019, we promoted recycling by announcing an average recycling rate of 99.6% for the entire Company. This goal was achieved as a result of our efforts to stop producing wastes that are simply buried or incinerated through all-out reduction and recycling of general and industrial wastes that occur in our production activities.

## Reuse

We promote in-house recycling of unneeded supplies such as OA equipment, desks, shelves and chairs.

## Reuse of Materials

We return the wooden and plastic pallets used to transport purchased parts and materials to companies transporting them and reuse such pallets among our bases and cooperating companies. We also crush wooden pallets into chips, which are used for mulch at greenery around our sites.

### [Other examples of reuse of materials]

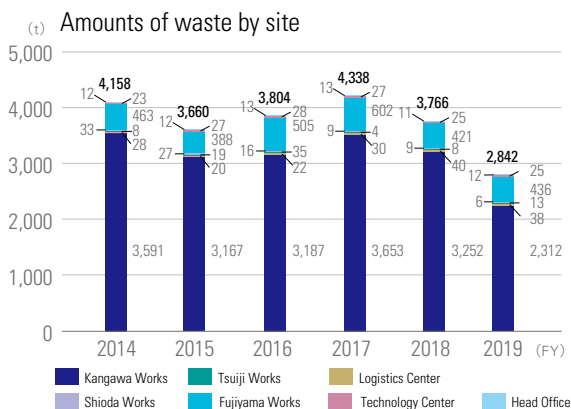
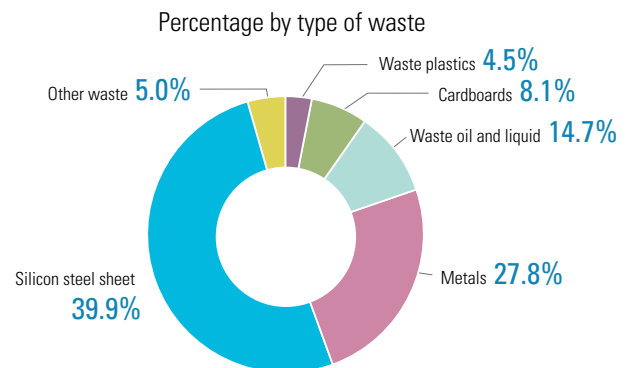
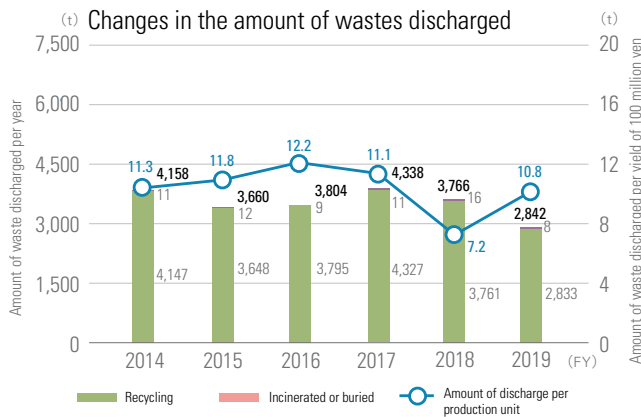
Cardboard boxes: returned to suppliers, reused as shock absorbers

Shock absorbers: reused within the company

Inscription board mounts: recycled



Wood crusher



# Chemical Substance Management

## Establishment and Use of Chemical Substance Management Guidelines

In August 2005, we established our Chemical Substance Management Guidelines for the management of hazardous substances, concerning parts and materials used for our company's products. Our Guidelines provide management rules concerning substances specified in various laws and regulations, such as substances whose use is restricted or prohibited by the RoHS Directive, SVHC (highconcern material) in REACH, substances banned by domestic and foreign legislation, and ordinance on prevention of hazards due to specified chemical substances. We keep these guidelines up-to-date by making necessary revisions in response to changes in relevant laws and regulations (last updated in November 2018). These include definitions of terms, RoHS threshold values, survey questionnaires for our suppliers on chemical substances that affect the environment, and a guarantee form to assure that no RoHS-restricted substances are included in the materials we use. Currently, we request that our suppliers agree to abide by our Guidelines, and that they submit a survey questionnaire and a guarantee form to assure that their supplies contain no RoHS-restricted substances as well as provide chemSHERPA data.

## Green Purchases

Our company actively purchases stationery and office supplies that are environmentally friendly, such as products using recycled materials, substitute materials and waste materials, refillable products, products with replaceable parts, and products designed for recycling.

## Reduction of Hazardous Chemical Substances

The Hazardous Chemical Reduction Design Working Group, a subordinate body of the Chemical Emission Subcommittee, is working together with the design sections of business divisions to focus on dealing with regulated substances or those banned by the RoHS directive.

- An examination of hazardous chemical substances contained in our products is under way, based on the Chemical Substance Management Guidelines.
  - Compliance response for the RoHS directive (ten substances)
    - Compliance response for phthalic esters (four substances) that have been added to the RoHS directive
    - Screenings and analyses conducted using newly adopted gas chromatograph mass spectrometer (PY-GCMS)
    - Engaging in manufacturing process contact pollution countermeasures
    - RoHS six substances contained in procured materials are being analyzed using an X-ray fluorescence analyzer (XRF).
    - Switching to applications that are exempt from RoHS (lead in metals, etc.)
  - Inclusion surveys and alternatives for new chemicals and additional regulated substances are being dealt with.
  - We are conducting inclusion surveys for SVHC materials (substances of high concern: 205 substances) in REACH regulations and providing information to our customers.
  - Surveys are conducted using Joint Article Management Promotion Consortium (JAMP) chemSHERPA and information is provided to customers.
  - An examination of substances will be conducted upon the request of the customer.
- 
- Ten substances restricted under "Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment" (Annex II amended by commission delegated directive (EU) 2015/863): Lead, hexavalent chromium, cadmium, mercury, two specific brominated flame retardants (PBB, PBDE), bis (2-ethylhexyl) phthalate (DEHP), butyl benzyl phthalate (BBP), dibutyl phthalate (DBP), diisobutyl phthalate (DIBP)
  - REACH(Registration, Evaluation, Authorization and Restriction of Chemicals): A comprehensive system for registration, evaluation/approval, and restriction of chemical substances in Europe
  - SVHC: Substances of Very High Concern. Substances chosen as substances subject to approval listed in Annex XIV of the REACH Regulation
  - chemSHERPA: A scheme developed under guidance by the Ministry of the Environment for transmitting information on chemical substances contained in products throughout the supply chain. Operated by Joint Article Management Promotion Consortium (JAMP)



Gas chromatograph mass spectrometer

# Chemical Substance Management

## Compliance with the PRTR

Our company registers and reports the amount of discharge and transportation of reportable PRTR-controlled substances when over one ton is consumed at a factory annually. In fiscal 2019, reports were submitted regarding styrene at the Kangawa Works and triphenyl and antimony phosphates at the Fujiyama Works, as well as their compounds and methyl naphthalene. Lead has not been required to be reported for the last 13 years because of the reduction of lead usage due to RoHS-compliant soldering.

PRTR (pollutant release and transfer register): A system for collecting, aggregating and publishing data on various hazardous chemical substances to see how much of these substances are released into the environment from what sources, or are transferred with waste from what facilities.

PRTR-controlled substances	PRTR-controlled substances (that are required to be reported and used in amounts of one ton or more)	
Styrene	Kangawa Works	11.0t
Triphenyl phosphate	Fujiyama Works	2.4t
Antimony and its compounds	Fujiyama Works	1.9t



An X-ray fluorescent analysis device at the Kangawa Works



Lead-free high-temperature soldering equipment at the Fujiyama Works



# Environmental Accounting

SANYO DENKI has been employing an environmental accounting system since fiscal 2003 with the aim of implementing efficient and effective measures for environmental conservation. We measure the costs required for environmental conservation in our business activities and the effects produced by these activities using quantitative indicators (measured in terms of monetary units or physical quantities) to the greatest extent possible, and analyze these costs and effects in order to improve the efficiency and activity levels of environment management.

## Performance in fiscal 2019

### (1) Environmental Conservation Costs

Environmental Conservation Costs in fiscal 2019 were 1,194 million yen in total: 237 million yen for investment and 957 million yen for costs and expenses. Investment primarily comprised global environment conservation costs, including the establishment of a photovoltaic generation system at the Kanagawa Works and the installation of ventilation and humidification equipment at the Technology Center. As for costs and expenses, R&D costs and management activities costs posted the high rates of 57.0% and 26.7%, respectively.

### (2) Environmental Conservation Effects

Reduced production at our bases resulted in a decrease in CO<sub>2</sub> emissions by 1,975 tons compared with the previous fiscal year. In addition, A-fuel oil usage decreased by 85 KL and LPG usage increased by approximately 12 tons, as the fuel used in hot/cold water generators at the Fujiyama Works was switched from the former to the latter.

### (3) Economic Effects

Cost savings due to energy conservation increased approximately 14% year on year, to ¥417 million. Profits from sales of useful materials were 44 million yen, down about 52% from the previous year. Furthermore, the promotion of a paperless workplace resulted in a 8% reduction in the use of copy paper and copy costs compared to the previous fiscal year, amounting to a savings of 18 million yen.

"Environmental Accounting Guidelines" published by the Ministry of the Environment, Format for publication C

Data range (company-wide)

Period covered: April 1, 2019 to March 31, 2020

Environmental Conservation Costs		(In thousands of yen)		
Category	Details of major activities	Investment	Cost	
(1) Costs within the area of business	1. Pollution prevention costs	Air pollution prevention (measurement of smoke and soot) Water pollution prevention (inspection of wastewater treatment tanks, extraction of sludge, sewage disposal, etc.)	0	24,131
	2. Global environment conservation costs	Periodic electricity checks	102,132	64,106
	3. Resource recycling costs	Reduction of waste, recycling, and proper waste disposal	0	54,982
	Total of items 1 through 3		102,132	143,219
(2) Upstream and downstream costs	Green procurement of office supplies and commissions for refurbishing and reconditioning products	0	14,245	
(3) Administration costs	Development and operation of EMS and environmental training for employees	0	248,281	
(4) R&D costs	Development of Eco-products (such as testing equipment and molds)	135,016	544,932	
(5) Social activity costs	Annual membership fee for the Japan Environmental Management Association for Industry, and other fees	0	5,884	
(6) Environmental damage measure costs	Assessment of soil contamination, and costs for countermeasures	0	74	
Total		237,148	956,635	

Expenses include depreciation of facilities and personnel costs.

# Environmental Accounting

## Effects of Environmental Conservation

Classification		Environmental performance indicators (unit)		Fiscal 2018	Fiscal 2019	Effects of Environmental Conservation
Effects on resources input for business activities	Input of energy	Energy consumption	Energy consumption measured in terms of the amount of CO <sub>2</sub>	12,261	10,286	1,975
			Electricity consumption (10,000 kWh)	2,122	1,807	315
			A-type heavy oil consumption (kl)	183.7	98.3	85.4
			LPG consumption (t)	329	340	△ 11
			Kerosene consumption (kl)	1.0	2.5	△ 1.5
			Light oil consumption (kl)	14.2	8.7	5.5
			Town gas consumption (1,000 Nm <sup>3</sup> )	826	611	214
			Gasoline consumption (kl)	37.8	40.7	△ 2.9
		Percentage of renewable energy in total energy consumption	Photovoltaic power generation (%) (company-wide)	2.019	2.793	0.774
Input of water	Water consumption		60.0	52.9	7.1	
Input of other resources	Input of other resources	Copy paper consumption (10,000 sheets)	539.5	469.8	69.7	
Effects on environmental burdens due to emissions and waste produced by business activities	Discharge of waste and other materials	Total discharge of waste and other materials	Total discharge of waste (t)	3,749	2,833	916
		Percentage of recyclable materials in the total discharge of waste	Recyclable materials and useful materials (%)	99.734	99.683	△ 0.051
		Discharge of hazardous waste		5.5	9.4	△ 3.9

## Economic Effects of Environmental Conserving Measures (Substantive Effects)

(In thousands of yen)

Classification		Amount
Profits	Sales of useful materials	43,629
Reduction of costs	Reduction of costs by energy saving	67,760
	Reduction of waste disposal costs by recycling	4,035
	Reduction of expenses for copy paper	1,605

# Activities at Offices and Works / Environmental Managers

## General Environmental Manager Hiroyuki Nishimura

SANYO DENKI established its environmental management system and obtained ISO14001 certification in 1999. Our general environmental manager works in the environmental management system under the direction of the top management to promote environmental activities at each of our sites. In addition to the energy conservation and waste reduction activities at each site, we aim to reduce the global environmental burden by developing high-efficiency energy-saving products for our customers and providing power equipment to reduce consumption using maximum power peak cutting functions and regenerating electric power from braking forces. We also disclose environmental information to a wide spectrum of both internal and external stakeholders and place great importance on communication with local communities and relevant individuals. The Environmental Committee works with environmental managers at our sites to organize specialized subcommittees in order to discuss measures for ongoing environmental improvements and to take an active part in promoting environmental conservation activities to achieve our goals.

The number of employees is as of March 2020

### Head Office Satoshi Hashiguchi



- Location : 3-33-1 Minami-Otsuka, Toshima-ku, Tokyo
- Area : 3,378 m<sup>2</sup>
- Number of employees : 260
- ISO certificate obtained : March 2002



At head office, operations are conducted by the sales, administrative and business divisions. Important targets for reducing our environmental impact include increasing the percentage of sales accounted for by eco-products, conserving energy, separating and reducing trash, decreasing copy paper usage and volunteering in local area clean-ups.

- Ascertaining and increasing the percentage of sales accounted for by eco-products in each division
- Power consumption reductions
- Separating and reducing trash
- Waste recycling rate improvements
- The use of digitized forms and paperless meeting materials led to a reduction in the amount of copy paper used.
- Volunteering in local area clean-ups

Going forward, all divisions will continue to promote environmental activities.

### Technology Center Hiroyuki Nishimura



- Location : Ueda Research Park, 812-3 Shimonogo, Ueda-shi, Nagano
- Area : 44,908 m<sup>2</sup>
- Number of employees : 302
- ISO certificate obtained : November 1999



Our Technology Center is engaged in the design and development of products, and is committed to promoting eco-designs and developing products that are free of hazardous chemicals. To promote the development of products designed for the environment, we certified 27 new items as Eco-products in fiscal 2019. Currently, we are working to comply on the four additional substances specified in under the RoHS Directive and substances of very high concern (SVHC) under REACH. We have also worked to reduce the consumption of electricity, LPG and copy paper, as well as the amount of waste, and cleaned areas around the Ueda Research Park for the local community. We will continue to promote energy savings with high efficiency products designed to be environmentally friendly, reuse of electric energy using power regeneration functions, etc., in order to help customers reduce their environmental burden when using our products.



## Kangawa Works Kazuhiko Takizawa



- Location : Ueda Research Park, 812-3 Shimonogo, Ueda-shi, Nagano
- Area : 67,140 m<sup>2</sup>
- Number of employees : 378
- ISO certificate obtained : March 2010
- Major products : AC / DC servo motors, stepping motors, and linear servo motors



At the Kangawa Works, we are engaged in initiatives aimed at reducing energy usage through automation and production improvements and promote energy conservation by turning off unnecessary lighting, the reduction of waste and copy paper usage and strive for zero emissions.

- In the motor assembly and inspection processes, a production and inspection guidance system has been introduced to prevent operational mistakes and accidental leakage of defective products so that unnecessary processes can be omitted. Also, the use of paper check sheets has been discontinued, leading to a reduction in copy paper use.
- Made efforts to conserve energy through automation using servo systems.
- Made efforts to eliminate waste (waste plastic and cardboard boxes) and achieve zero emissions.
- Engaged in the large-scale cleaning of the surrounding area in cooperation with the neighborhood community association.
- Working on further reduction of environmental burdens through the use of the BEMS central monitoring system that can oversee the energy consumption of the entire site.

## Shioda Works Satoshi Atou



- Location : 517 Goka, Ueda-shi, Nagano
- Area : 5,698 m<sup>2</sup>
- Number of employees : 22
- ISO certificate obtained : March 2001
- Major products : Stepping motors



The Shioda Works is promoting activities to save energy, reduce waste, and eliminate hazardous substances from the manufacturing processes.

- Reduction in power consumption (planned operation of air conditioners by using timers and checking room temperatures, and a conserved power through increased production efficiency)
- Reduction in the consumption of A-type heavy oil (planned operation of boilers using timers)
- Reduced amount of copy paper used (promoted elimination of forms)
- Strict separation of trash
- Use of components and materials meeting the RoHS directive
- Volunteer activities for cleaning areas around the factory
- Reduction of incinerated waste (ongoing surveillance and detailed analysis of waste)

## Fujiyama Works Shunsuke Niimi



- Location : 4016 Fujiyama, Ueda-shi, Nagano
- Area : 99,828 m<sup>2</sup>
- Number of employees : 345
- ISO certificate obtained : December 1999
- Major products : Cooling fans, UPS's (uninterruptible power supply devices), power conditioners for photovoltaic power generation systems, emergency self-power generation systems, power source monitoring systems, AC / DC servo amplifiers, stepping drivers and system controllers.



The Fujiyama Works operates its production activities in the F1, F2 and F3 wings which are occupied by the Cooling Systems Division, Power Systems Division and Servo Systems Division, respectively. Each division is working on the reduction of environmental burdens, automation, energy saving and waste reduction and zero emissions through improvements of their operations. In fiscal 2018, our efforts will continue toward the achievement of our environmental goals.

- Reduction in the consumption of electricity and A-type heavy oil
- Reduction in the consumption of lead by using lead-free solder
- Reduction of waste (waste plastics and cardboards) and zero emission activities
- Use of components and materials meeting the RoHS directive
- Volunteer activities for cleaning areas around the factory

# Data Summary

## Data on Air Quality, Water Quality, and Noise

Kangawa Works	Item	Regulatory standard	Voluntary standard	Actual value
Air quality <small>Air pollution control laws and ordinances</small>	Smoke and soot (g/m <sup>3</sup> N)	Exempted (No water disposal tank)		
	NOx (ppm)			
	Sox (m <sup>3</sup> N/h)			
Water quality <small>Water pollution control laws, ordinance and agreements</small>	PH (pH)	5.8 ~ 8.6	—	7.8
	BOD (mg/L)	20	19	7.1
	SS (mg/L)	30	28	17.0
Noise <small>Laws, ordinances and agreements for noise regulation</small>	(dB)	65	64	59

Shioda Works	Item	Regulatory standard	Voluntary standard	Actual value
Air quality <small>Air pollution control laws and ordinances</small>	Smoke and soot (g/m <sup>3</sup> N)	Disuse due to aging of equipment		
	NOx (ppm)			
	Sox (m <sup>3</sup> N/h)			
Water quality <small>Water pollution control laws, ordinance and agreements</small>	PH (pH)	Exempted (No water disposal tank)		
	BOD (mg/L)			
	SS (mg/L)			
Noise <small>Laws, ordinances and agreements for noise regulation</small>	(dB)	65	64	55

Technology Center	Item	Regulatory standard	Voluntary standard	Actual value
Air quality <small>Air pollution control laws and ordinances</small>	Smoke and soot (g/m <sup>3</sup> N)	Exempted		
	NOx (ppm)	150	130	79
	Sox (m <sup>3</sup> N/h)	Exempted		
Water quality <small>Water pollution control laws, ordinance and agreements</small>	PH (pH)	5.8 ~ 8.6	—	7.6
	BOD (mg/L)	20	19	2.5
	SS (mg/L)	60	54	8.0
Noise <small>Laws, ordinances and agreements for noise regulation</small>	(dB)	Exempted		

Fujiyama Works	Item	Regulatory standard	Voluntary standard	Actual value
Air quality <small>Air pollution control laws and ordinances</small>	Smoke and soot (g/m <sup>3</sup> N)	0.3	0.03	0.0092
	NOx (ppm)	180	130	63
	Sox (m <sup>3</sup> N/h)	5.0	2.5	0.009
Water quality <small>Water pollution control laws, ordinance and agreements</small>	PH (pH)	5.8 ~ 8.6	—	7.6
	BOD (mg/L)	50	48	16.0
	SS (mg/L)	60	54	23.0
Noise <small>Laws, ordinances and agreements for noise regulation</small>	(dB)	Exempted		

## Waste Recycling Data

Waste		Amount discharged (tons)	Amount recycled (tons) / Recycling rate (%)	Recycling method
Sludge	Organic sludge	7.8	7.8 / 100	After oil and water are separated, dehydrated residues are turned into compost.
	Inorganic sludge	16.1	15.0 / 93.0	After intermediate treatment, some of the sludge is recycled as road construction materials. Some is also gasified by furnaces, with residues recycled as cement materials.
Waste liquid	Oil-based materials	5.8	5.8 / 99.9	After oil and water are separated, the material is recycled as fuel.
	Water-soluble materials (detergents, grinding liquid, etc.)	255.6	255.6 / 100	Reuse and incinerated residues are used as cement materials.
	Volatile materials	9.4	9.4 / 100	Distilled and used as recycled oil.
	Waste acid (batteries)	88.2	88.2 / 100	Crushed, sorted, and all recycled.
Waste plastics	OA equipment and circuit boards	14.8	14.8 / 100	Crushed, sorted, and all recycled.
	Vinyls and films	66.3	66.3 / 100	Turned into solid fuel (refuse derived fuel), reducing agents (using furnaces), and materials for power generation (thermal recycling)
	Molding scraps	25.7	25.7 / 100	
	Other solid scraps	17.6	17.6 / 91.5	
	Styrofoam recycling	4.8	4.8 / 100	Turned into raw materials (material recycling), immersed in solvent to be turned into soil, and recycled as raw material
Metal scraps	Scraps generated in manufacturing processes	1914.8	1914.8 / 100	Recycled as metal materials
	Metals (including empty cans)	0.5	0.5 / 100	
Paper scraps	Used paper	7.4	7.4 / 100	Turned into raw materials for recycled paper
	Newspapers, magazines, and other papers	46.5	46.5 / 100	
	Cardboards	230.1	230.1 / 100	
Wood scraps	Packages and transportation pallets	53.8	53.8 / 100	
Glass and ceramic scraps	Empty bottles, glass, and ceramics	2.3	2.3 / 100	Crushed and turned into road construction materials
Other waste	Paper scraps and other waste	7.2	0.9 / 12.1	Incinerated
Total		2842.0	2833.9 / 99.7	

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