

ENVIRONMENTAL INITIATIVES

Environmental Activity Report

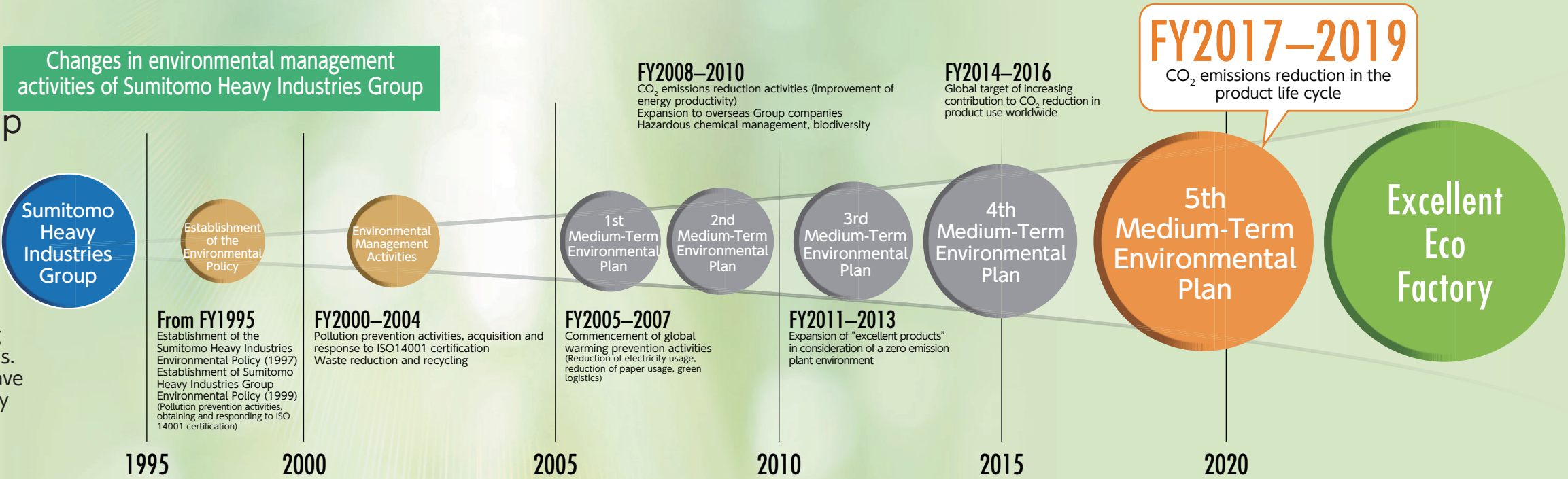
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Sumitomo Heavy Industries Group
Key Issues in the
5th Medium-Term
Environmental Plan

Sumitomo Heavy Industries Group has been developing a growth strategy in anticipation of global market trends. Under the 5th Medium-Term Environmental Plan, we have been promoting activities to address the following 4 key global issues.



(1) Strengthening of environmental risk management

Sumitomo Heavy Industries Group works on prevention of environmental incidents and continuous improvement and vitalization of its environmental management system.

(2) Reduction of CO₂ emissions in product life cycle

Among the "environmental loads in the product life cycle", we will work on "reduction of CO₂ emissions", which is one of the largest "environmental loads (in particular, impacts on global warming)."

(3) Reduction of environmental loads associated with business activities

Among the "environmental loads in the product life cycle", we will work on "reduction of environmental loads" associated with business activities other than "CO₂ emissions".

(4) Conservation of biodiversity

We will work mainly on "reduction of environmental loads in the product life cycle" including (contribution to) reduction of CO₂ emissions that have the largest impact on biodiversity.

Amount of CO₂ emissions in the entire product life cycle and contribution amount of CO₂ reduction during product use

Of CO₂ emissions in the entire product life cycle, amount of CO₂ emissions during product use (excluding energy devices and biomass) is as huge as approximately 1.1 million tons. While the CO₂ emissions reduction effect during product use was 1.7 million tons in FY 2019, it is an important issue how to contribute to the society by enhancing this reduction effect in addition to the reduction of CO₂ emissions during manufacturing.

Contribution amount of CO₂ reduction with products
(Main products delivered during FY 2019)
(10,000 t-CO₂)

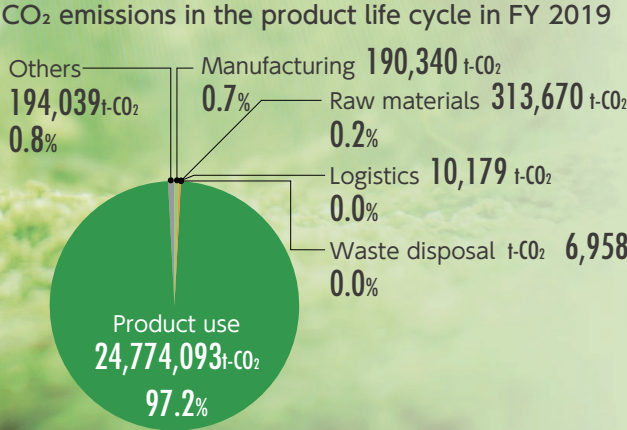
Field	Contribution to CO ₂ emission reduction in the product life cycle (based on design standard)	Basis for calculation	Product
Energy related	775.7	Reduction and higher efficiency through biomass	CFB boiler, turbine
Transportation-related	85.7	Improved fuel efficiency and propulsion through model changes, etc.	Aframax tanker
Industrial machinery and others	90.4	Improved fuel efficiency through model changes, reduced energy usage, use of renewable energy, higher efficiency	Hydraulic shovels, forklifts, plastic extrusion molding equipment, precision vacuum pumps, air diffusers, mixers, etc.
Total	951.7		



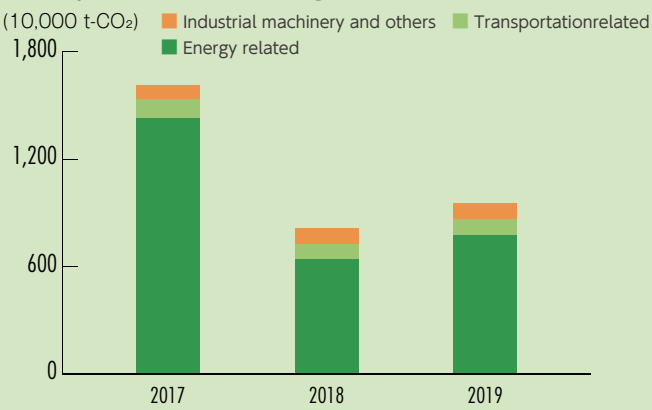
Biomass power station
(AWEP YAMAGUCHI Co., Ltd.)



Boron-neutron capture therapy (BNCT) system



Contribution to CO₂ emissions reduction in the product life cycle (based on design standard)



Reduction in CO₂ emissions due to biomass generation
(Cumulative emissions from FY 1999 to FY 2019)
6,135,000 t-CO₂

Environmental management system

Sumitomo Heavy Industries Group Environmental Policy

Environmental Philosophy

The Sumitomo Heavy Industries Group (“SHI Group”) will adhere to the principles of the Sumitomo Business Spirit and make sincere efforts towards the preservation of the global environment throughout of all its business activities with the aim of achieving a sustainable society .

Environmental Policy

The SHI Group will, based on its environmental philosophy, positively and actively make efforts in the following areas:

1. Prevention of environmental pollution;

2. Contribution to a low-carbon society;

3. Achievement of a recycling-based society;

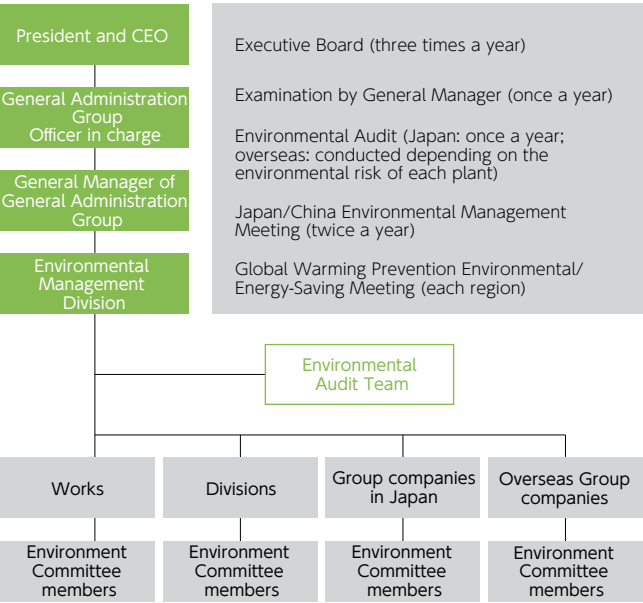
4. Preservation of biodiversity;

5. Compliance with laws and other regulations; and

6. Strengthening and continuous improvement of the environmental management system

Sumitomo Heavy Industries, Ltd.
May 1, 2017

Environmental management system



Environmental management audits

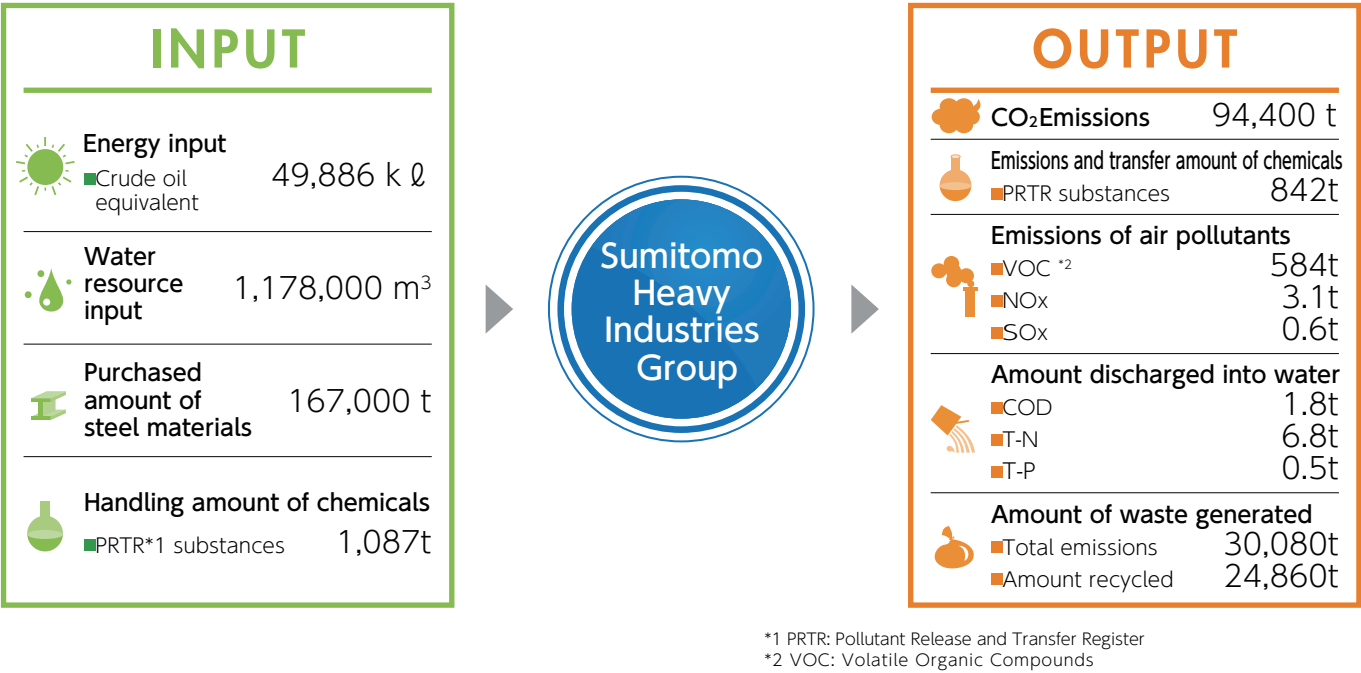
Implementation of audit on each Works/Group company in Japan and each overseas subsidiary company

Environmental Management Department of the Head Office conducts an environmental audit annually on each Works and Group company in Japan. Audit is conducted on the overall environmental management including environmental risk assessment, state of compliance with laws and regulations, and global warming prevention activities. In order to improve the environmental management level, the audit results are evaluated on a 5-point scale for each department based on our own evaluation criteria and the results are reported on operating officer meetings.

In addition, the Environmental Management Department conducts an audit for each overseas affiliated company with the primary purpose being to achieve targets of environmental risk reduction and global warming prevention activities in a planned manner by taking environmental loads of each company into account. As with Group companies in Japan, the audit results are evaluated on a 5-point scale and reported on operating officer meetings. Audits were conducted on 2 plants in the Philippines and 4 plants in China in FY 2019.

Environmental Targets (Medium-Term Plan) and Accomplishment

Overview of environmental loads in FY 2019 (SHI Group companies in Japan)



Environmental accounting in FY 2019

Implementation of positive investment on research & development (1.3 fold compared to the year before)

SHI Group implements environmental accounting based on the “Environmental Accounting Guidelines 2005” of the Ministry of Environment as a criterion to determine investments/costs and effectiveness related to environmental preservation.

(Unit: Million yen)

Costs for environmental preservation						Effectiveness of environmental preservation		
Category	Main efforts	Investment		Cost		Economic effect		Main effects
		FY 2018	FY 2019	FY 2018	FY 2019	FY 2018	FY 2019	
(1) Costs within business area	Maintenance/depreciation of environmental load reduction equipment or facilities	483	568	796	701	322	218	
Breakdown	(1)-1 Pollution prevention costs	42	87	256	227	0	0	
	(1)-2 Global environmental conservation costs	430	479	58	25	44	42	Cost reduction by energy/resource saving and 3Rs
	(1)-3 Resource recycling costs	11	2	482	449	278	176	Cost reduction by waste reduction Sales value of valuable resources
(2) Upstream/downstream costs	Reduction of product packaging materials, recycling of home electric appliances, and use of both sides of paper	1	1	1	2	0	0	
(3) Management activity costs	Maintenance and administration of ISO 14001 standards, and expansion of green spaces	14	10	154	114	0	0	
(4) Research & development costs	Research and development for environmental impact reduction of products and research and development of environmental equipment	2,499	3,361	495	246	0	0	
(5) Social activity costs	Global environmental preservation and greening activities	0	0	1	1	0	0	
(6) Costs for handling environmental damage	Levies on air pollution loads, Burden charge for green belts and pollution compensation	0	0	0	0	0	0	
Total		2,997	3,940	1,447	1,064	322	218	

Environmental Targets (Medium-Term Plan) and Accomplishment

General overview of 5th Medium-term Environmental Plan (2017-2019) and FY2019 activities

Achieved 15 out of 20 items

Achievement status of targets and activities in FY 2019 as the final target fiscal year in the 5th Medium-Term Environmental Plan is as follows.

Evaluation: ○ Achieved △ Achievement rate of 90% or higher × Achievement rate of less than 90%					
Index	Item	5th Medium-Term Environmental Plan (2017 ~ 2019)	FY 2019 target	FY 2019 achievement	Evaluation
Strengthening of environmental risk management	(1) Review of Environmental Policy	• Review of Environmental Philosophy • Review of Environmental Policy	• Review of Environmental Philosophy • Review of Environmental Policy	• Reviewed and issued Environmental Philosophy • Reviewed and issued Environmental Policy	○
	(2) Prevention of environmental accidents through environmental risk reduction	• Zero occurrence of major environmental accidents • No more than 3 occurrences of environmental accidents	• Zero occurrence of major environmental accidents • No more than 3 occurrences of environmental accidents	• Zero occurrence of major environmental accidents • 2 environmental accidents occurred	○ ○
	(3) Continual improvement of environmental management systems at overseas bases	• Implementation of education for raising the level of environmental personnel • Establishment and expansion of risk assessments	• Implementation of education for raising the level of environmental personnel • Establishment and expansion of risk assessments	• Implementation of education at the time of environmental audits • Continued activities in reference to cases of mother plants in Japan.	○
	(4) Promotion of management of chemicals contained in products	• Promotion of management of chemicals contained in products (RoHS, REACH)	• Promotion of management of chemicals contained in products (RoHS, REACH)	• Verification of the management status by environmental audits	○
Reduction of CO ₂ emissions in the product life cycle	(1) CO ₂ emissions reduction during product manufacturing	• Energy productivity (Japan) Increase of 3% compared to FY 2016 (Overseas) Increase of 3% compared to FY 2016	• Energy productivity (Japan) Increase of 3% compared to FY 2016 (Overseas) Increase of 3% compared to FY 2016	• Energy productivity (Japan) Increase of 2.6% compared to FY 2016 (Overseas) Increase of 20% compared to FY 2016	× ○
	(2) CO ₂ emissions reduction during product use	• Calculation and publication of total contribution amount of CO ₂ reduction during product use (Japan)	• Calculation and publication of total contribution amount of CO ₂ reduction during product use (Japan)	• Publication of total contribution amount of CO ₂ reduction during product use in Integrated Report (Japan)	○
	(3) CO ₂ emissions reduction during product transportation (green logistics)	• Amount of reduction:Per basic unit of transportation weight / Reduction of 3% compared to FY 2016 (Japan)	• Amount of reduction:Per basic unit of transportation weight / Reduction of 3% compared to FY 2016 (Japan)	• Amount of reduction: Per basic unit of transportation weight / Increase of 5.5% compared to FY 2016 (Japan)	×
Reduction of environmental loads in business activities	(1) Reduction of VOC emissions	• Maintain amount of reduction of 34% compared to FY 2006 (Japan, 2 departments): Total amount of use (Japan, 2 departments) : Basic unit of sales • Maintain amount of reduction of 3% compared to FY 2013 (Overseas) : Basic unit of sales	• Maintain amount of reduction of 34% compared to FY 2006 (Japan, 2 departments) : Total amount of use (Japan, others) : Basic unit of sales • Maintain amount of reduction of 3% compared to FY 2013 (Overseas) : Basic unit of sales	• Amount of reduction compared to FY 2006 (Japan, 2 departments) : Reduction of 42% in total amount of use (Japan, others) : Reduction of 50% per basic unit of sales • Amount of reduction compared to FY 2013 (Overseas) : Reduction of 61% per basic unit of sales	○
	(2) Planned disposal of PCB waste	• Planned disposal	• Planned disposal	• Verification of disposal status by environmental audits, continued disposal	○
	(3) Reduction of waste discharge and its effective use	• Amount of reduction per basic unit of sales (Japan) Reduction of 6% compared to FY 2013 (Overseas) Reduction of 6% compared to FY 2013 • (Japan) Maintain a landfill rate of less than 0.5% • (Overseas) Maintain a non-landfill rate of waste disposal of 95%	• Amount of reduction per basic unit of sales (Japan) Reduction of 6% compared to FY 2013 (Overseas) Reduction of 6% compared to FY 2013 • (Japan) Maintain a landfill rate of less than 0.5% • (Overseas) Maintain a non-landfill rate of waste disposal of 95%	• Amount of reduction per basic unit of sales (Japan) Reduction of 12% compared to FY 2013 (Overseas) Increase of 10% compared to FY 2013 • (Japan) Non-landfill rate of 0.004% • (Overseas) Non-landfill rate of waste disposal of 76%	○ × ○ ×
	(4) Reduction of product packaging materials	• Amount of reduction per basic unit of sales Reduction of 6% compared to FY 2013 (Japan)	• Amount of reduction per basic unit of sales Reduction of 6% compared to FY 2013 (Japan)	• Amount of reduction per basic unit of sales Reduction of 28% compared to FY 2013 (Japan)	○
	(5) Reduction of water consumption	• Amount of reduction in total amount of use (Japan) Maintain the average amount used in the period from FY 2014 to 2016. • Amount of reduction per basic unit of sales (Overseas) Reduction of 3% compared to FY 2013	• Amount of reduction in total amount of use (Japan) Maintain the average amount used in the period from FY 2014 to 2016. • Amount of reduction per basic unit of sales (Overseas) Reduction of 3% compared to FY 2013	• Amount of reduction in total amount of use (Japan) Increase of 4.9% compared to the average amount of use during a period from FY 2014 to 2016 • Amount of reduction per basic unit of sales (Overseas) Reduction of 21% compared to FY 2013	× ○
Conservation of biodiversity	(1) Reduction of CO ₂ emissions in the product life cycle	• Promotion of efforts on key Issues	• Promotion of efforts on key Issues	• Promotion of efforts of each department as key issues	○
	(2) Planting around offices	• Continued greening of plants	• Continued greening of plants	• Verification of greening plan for each manufacturing base and its implementation status by environmental accounting	○

Global Warming Prevention Activities

SHI Group has been working on reduction of CO₂ emissions as our most important issue on every stage of our business activities.

Promotion of environmental management

Promotion of full-participation efforts

In SHI Group, with a recognition of global warming prevention activities as a part of environmental management, results in each business department are managed monthly by Environmental Management Department to be fed back to persons in charge of business operations. In addition, the results are also reported to the management 3 times a year at operating officer meetings. Each department of SHI Group works on “full-participation” efforts and “visualization” of activities as well as various process improvement activities for further improving efficient energy use to promote global warming prevention activities.

CO₂ emissions reduction

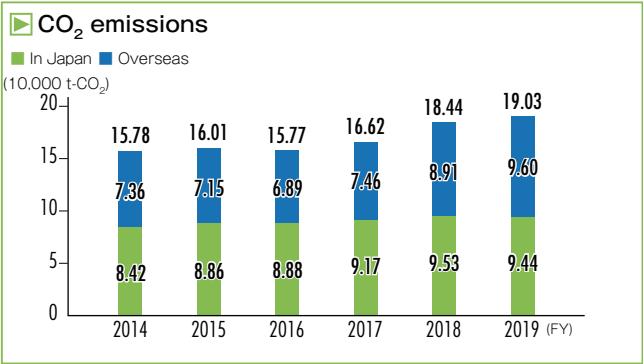
CO₂ emissions are on an increasing trend across the entire Group.

Overall CO₂ emissions of the entire SHI Group in FY 2019 increased by 6 % compared to FY 2016.

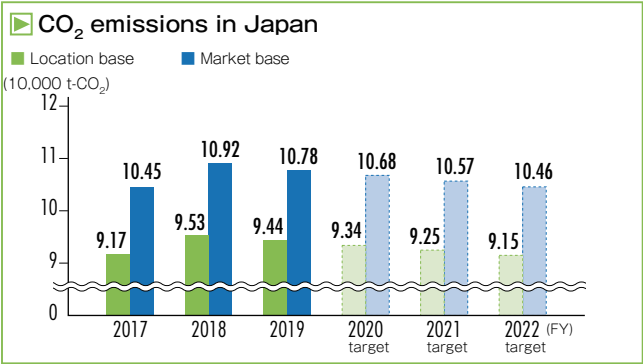
Factors of the increase include the following 3 items:

- An increase in energy consumption along with an increase in production;
- An increase in electricity consumption associated with research and development (constant temperature rooms, clean rooms, commissioning, etc.) ; and
- An increase in air conditioning for ensuring product quality and preventing heat stroke among workers.

Under the 6th Medium-Term Environmental Plan to be initiated from FY 2020, all employees across SHI Group have determined to work on total CO₂ emissions reduction in consideration of the response to climate change.



* Used a Japan conversion factor of 0.462 g-CO₂/kWh as a fixed value.



* Calculated using location-based CO₂ emission factor of 0.462 g-CO₂/kWh.

Improvement of energy productivity

Targets have been achieved overseas but not in Japan.

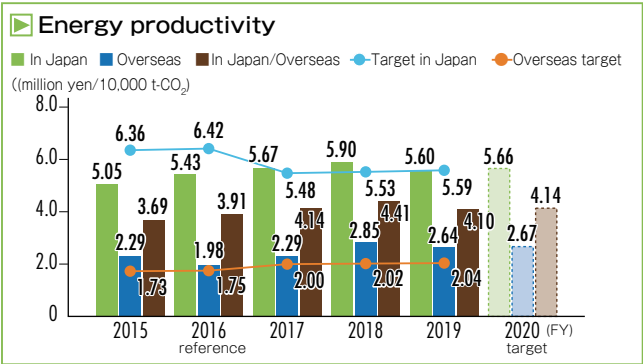
In relation to production activities accounting for a majority of CO₂ emissions in SHI Group, energy productivity (sales/CO₂ emissions: Inverse of basic unit) is used to carry out monthly management and operation of each BU (business unit).

In spite of activities in FY 2019 carried out with a target of improvement by 3% compared to FY 2016, main production bases in Japan achieved an improvement of 2.6% being unable to clear the target only slightly.

As for overseas production bases, as a result of promotion of activities with the target of an improvement of 3% compared to FY 2016, the target was cleared by achieving an of improvement 20% in FY 2019.

We will continue to promote the following measures.

- ① Setting and practicing of total operation stop days
- ② Reduction of standby power of equipment
- ③ Efficient operation of equipment
- ④ Reduction of energy consumption by reducing production lead time

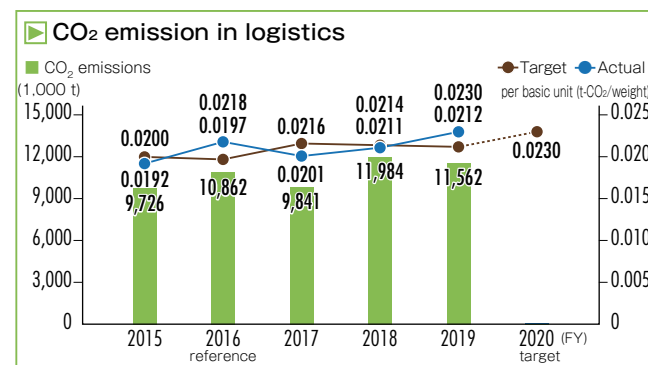


Global Warming Prevention Activities

Promotion of green logistics

Promotion of loading ratio improvement as well as effective utilization of modal shift and consolidated cargo

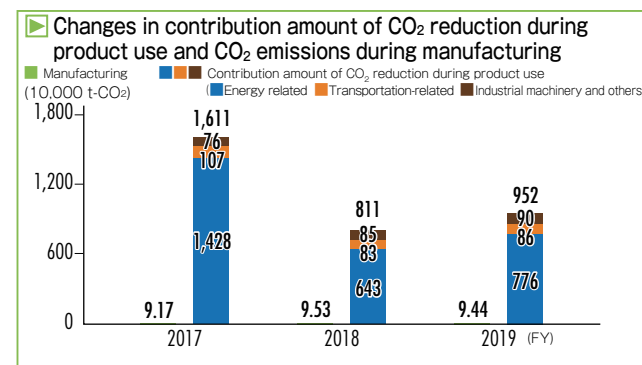
We have been working on reduction of CO₂ emissions by eliminating waste and streamlining of transportation. With a target of reduction of 3% compared to FY 2016, promotion activities have been continued including loading ratio improvement as well as effective utilization of modal shift and consolidated cargo. In FY 2019, actual performance increased by 0.023 compared to a target of 0.021 per transportation basic unit (t-CO₂/weight), being unable to achieve the target. We will continue activities such as modal shift promotion and loading ratio improvement even after FY 2020.



Contribution in CO₂ emissions reduction during product use

Calculation of contribution amount of CO₂ reduction during product use

Under the 5th Medium-Term Environmental Plan, contribution amount of CO₂ emissions reduction during product use is calculated for each business department and the result is disclosed. Contribution amount of CO₂ reduction during product use sold in FY 2019 was 1.76 million ton-CO₂ excluding energy-related equipment which amounts to approximately 18 times the total CO₂ emissions during manufacturing in SHI Group. 9.52 million ton-CO₂ obtained by adding a contribution amount of reduction in biomass boilers and electricity generating turbines to this value is a contribution amount of CO₂ reduction of SHI Group.



Recycling-Oriented Society Activities

We have been making efforts on suppressing waste substances discharged from business activities and recycling/effective use of such waste.

Promotion of environmental management

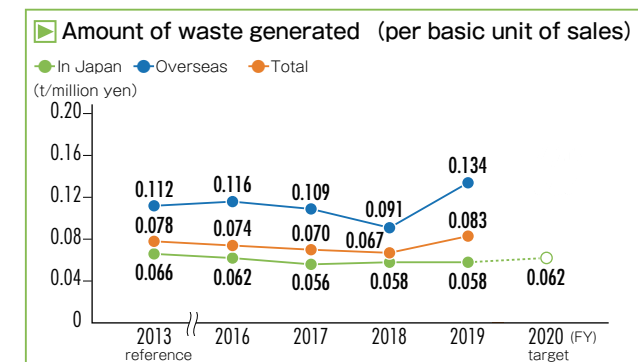
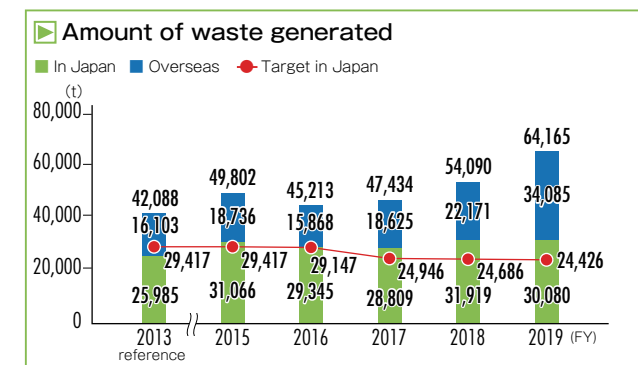
Building a recycling-oriented society

In order to build a recycling-oriented society, the SHI Group has been working to reduce waste emissions and so forth from business activities and recycle and effectively use waste generated. We have also sought to reduce environmental impacts through business activities.

Suppression of emissions and reduction of disposal amount

Achievement of a target of emissions per basic unit of sales in Japan

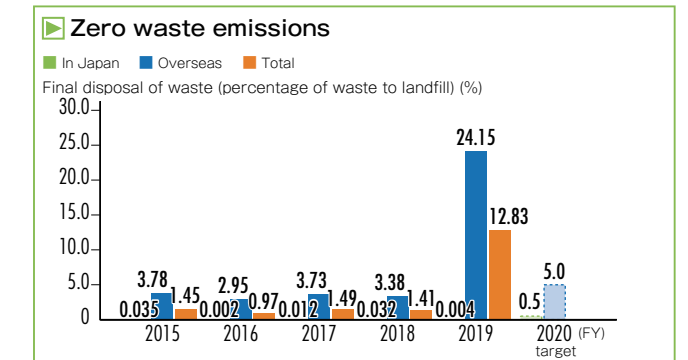
In Japan, as a result of full-fledged efforts on streamlining of production activities, elimination of waste use, suppression of emissions including metallic scraps, and segregated management trying to achieve a target of reduction of waste discharge amount per basic unit of sales of 6% compared to FY 2013, we have achieved a reduction of 12% in FY 2019 compared to FY 2013. As for overseas subsidiary companies, as a result of activities trying to achieve the similar target of a reduction of 6% compared to FY 2013, their activities resulted in an increase of 10% in FY 2019.



Zero emissions

Zero emissions have been achieved at all SHI Group companies in FY 2019.

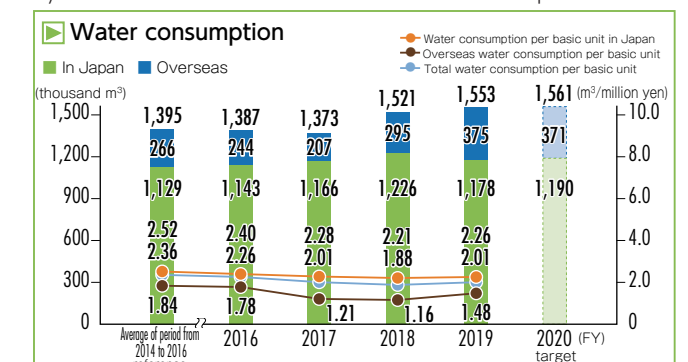
With a definition that a plant with a ratio of landfill disposal volume to waste discharge volume (landfill rate) of less than 0.5% is a zero-emission plant, SHI Group has been promoting such activities in Japan since FY 2005. As a landfill rate of 0.004% shows that was achieved in 2019 by all Japan manufacturing sites (6 Works and 7 plants) and group businesses other than Works (9 companies) in cooperation, the target has been continuously achieved since FY 2011. Overseas, in spite of initiatives with a target to achieve a non-landfill rate of no less than 95%, the result was far from the target in FY 2019, only achieving 76%. Landfill rate in total of Japan and overseas in FY 2019 was 12.83%. Recycling through waste segregation is important for achieving zero emissions. We pursue our plants to be able to contribute to a recycling-oriented society based on continued strict waste segregation to maintain zero emissions in the future.



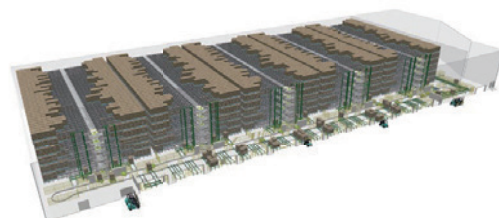
Reduction of water consumption

Water consumption in Japan is on an increasing trend

In SHI Group, since unnecessary water consumption was judged to have been almost eliminated as a result of continued reduction of water consumption, it was set as a target in the 5th Medium-Term Environmental Plan that the average water consumption during the previous Medium-Term Plan (from 2014 to 2016) should be maintained in Japan. In FY 2019, it resulted in an increase of 4.9% compared to the target of reduction mainly due to large quantity of water used for sprinkling during a scorching summer and for cleaning required after disasters from torrential rains. We aim to achieve the target by continued efforts on reduction of water consumption.



Cyclo® Reducer



Magic Rack®



Crude oil tanker

Semiconductor manufacturing equipment
(New all-in-one type ion implanter: SAion)

Chemical Management Activities

We manage chemicals to promote prevention of environmental pollution.

Complete elimination of organochlorine chemicals Continued complete elimination of use

Complete elimination of substances subject to the Soil Contamination Countermeasures Act

We have been continuously working on complete elimination of organic chemicals subject to the Soil Contamination Countermeasures Act, namely dichloromethane, tetrachloroethylene, and trichloroethylene.

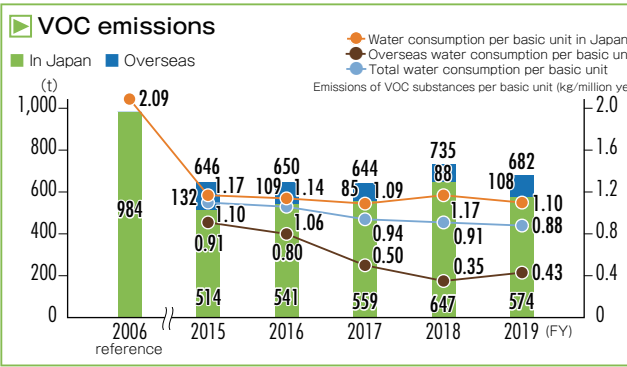
Complete elimination of ozone-depleting substances

Complete abolition of the use of ozone-depleting substances HCFC-225 and HCFC-141 b since FY 2008 and FY 2010, respectively, has been continued. We have been promoting scheduled renewal of R-22 of which production is to be discontinued in FY 2020.

Emission control of VOC substances

Group companies in Japan achieved a 42% reduction of emissions compared to FY 2006 and a 50% reduction per basic unit of sales

Toluene, xylene, and ethyl benzene contained in paint solvents account for at least 90% of the VOC substances used by SHI Group. We are working on a target to maintain a reduction of at least 34% compared to FY 2006. In FY 2019, we achieved a 42% reduction compared to FY 2006 by introducing powder coating, adopting low solvent paints and VOC-free cleaning agents, and reducing paint consumption through improvement of paint efficiency. In addition, we also achieved a 50% reduction per basic unit of sales. We have determined to continuously work on emissions reduction also from FY 2020 and beyond by taking measures such as expansion of scope for adopting VOC-free cleaning agents, low solvent paints and powder coating, and reduction of paint consumption through further improvement of painting efficiency. Overseas subsidiary companies also commenced the activities in FY2012.



Emissions and transfer volume of PRTR substances

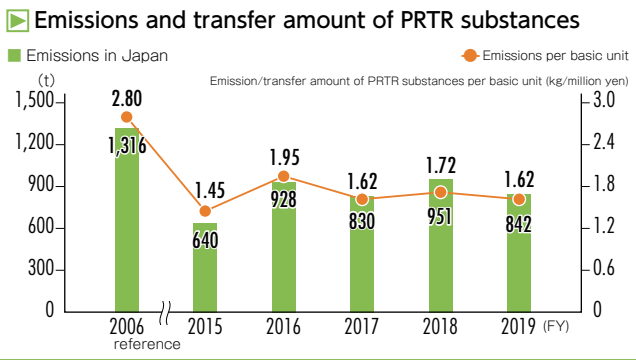
Reduction of 41% and compared to FY 2006 and 50% per basic unit of sales

At least 90% of PRTR substances is shared by paint solvents (toluene, xylene, and ethyl benzene). In FY 2019, a 41% reduction was achieved compared to FY 2006. In addition, we also achieved a 50% reduction per basic unit of sales. We will work on reduction of emissions and transfer volume by establishing and expanding solvent recovery and removal equipment or facilities while maintaining quality and expanding the adoption of low solvent paints.

Emissions and transfer amount of Class I Designated Chemicals Substances under the PRTR Law in FY 2019 (Substances subject to reporting)

Substance No.	Substance designation	Emissions + transferred amount (Unit: kg)	
		FY 2018	FY 2019
53	Ethylbenzene	218,658	217,247
80	Xylene	498,744	397,275
240	Styrene	2,050	1,561
296	1,2,4-Trimethylbenzene	16,901	21,127
297	1,3,5-Trimethylbenzene	5,559	6,187
300	Toluene	156,262	142,686
374	Hydrogen fluoride and water-soluble salts	17,555	22,381
384	1-Bromopropane	11,122	11,474
392	n-Hexane	866	321
405	Boron and compounds	1,618	1,155
412	Manganese and compounds	12,366	12,011
420	Methyl methacrylate	1,366	640

* Emissions + transferred amount is the total amount for SHI and all its Group companies.



Control of PCB and complete abolition of such devices as to use PCB

Gradual replacement/detoxification of stabilizers containing PCB

All of the devices containing high concentration PCB have been registered earlier to the Japan Environmental Storage & Safety Corporation, which is a waste-disposal company, and are detoxified in a planned manner based on the Act on Special Measures concerning Promotion of Proper Treatment of PCB Waste. Transformers containing PCB and stabilizers for lighting equipment containing PCB are replaced/detoxified in sequence. Moreover, upon completion of a survey of equipment containing low concentration PCB, we have been working on its detoxification in sequence.

Environmental Load Data

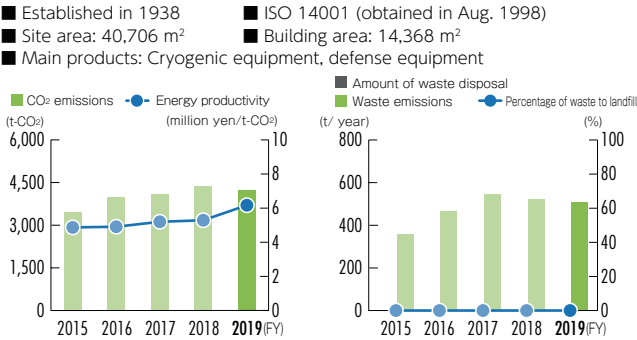
Environmental load data of Works* 1 of Sumitomo Heavy Industries, its Group companies in Japan* 2 and main overseas Group companies is as follows.

*1 Including Group companies within Works

*2 Group companies outside of Works

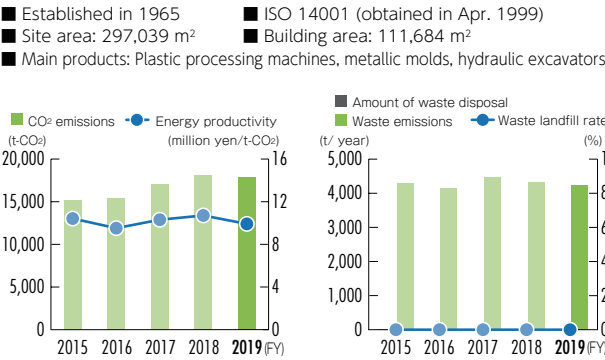
[Environmental load data of each Works]

Tanashi Works



Energy consumption	PRTR (kg/year)	Emissions	Transfer volume
Electric power (1,000 kWh)	7,178	Ethylbenzene	25.0
Gasoline (kL)	0.02	1,2-Epoxybutane	2.2
Kerosene (kL)	0.57	Ferric chloride	0.0
Heavy fuel oil A (kL)	0.00	Xylene	52.6
Light oil (kL)	2.42	Chromium and chromium (III) compounds	0.0
LPG (t)	0.00	Chromium (VI) compounds (including lead chromate)	0.0
LNG (t)	0.00	Ethylene glycol monoethyl ether	9.4
City gas (1,000 m ³)	2.00	Acetate	0.0
Water consumption (m ³)	11,909	Toluene	371.2
Atmospheric discharge		Lead	0.0
SOx (kg)	-	Lead compounds	0.0
NOx (kg)	-	Nickel	0.0
		1-Bromopropane	6,074.4
		Boron and compounds	0.1
		Manganese and compounds	0.0

Chiba Works

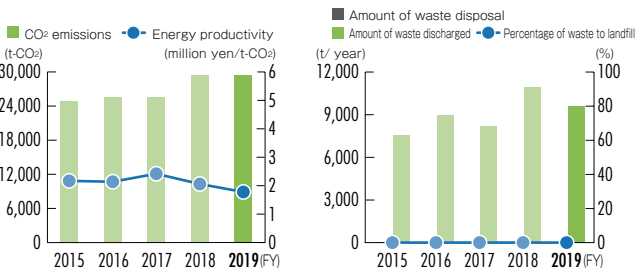


Energy consumption	PRTR (kg/year)	Emissions	Transfer volume
Electric power (1,000 kWh)	21,227	Zinc compounds (water-soluble)	197
Gasoline (kL)	143.61	Ethylbenzene	22,633
Kerosene (kL)	1.28	Xylene	38,752
Heavy fuel oil A (kL)	0.00	Silver and water-soluble compounds	0
Light oil (kL)	696.16	Styrene	500
LPG (t)	42.17	1,2,4-Trimethylbenzene	5,353
LNG (t)	0.00	1,3,5-Trimethylbenzene	149
City gas (1,000 m ³)	1,391.68	Toluene	12,380
Water consumption (m ³)	75,466	Naphthalene	633
Atmospheric discharge		Nickel compounds	4
SOx (kg)	-	Hydrazine	6
NOx (kg)	198	Di-n-butyl phthalate	0
		Hexamethylene diisocyanate	150
		n-Hexane	134
		Manganese and compounds	7
		Methyl methacrylate	327

[Environmental load data of each Works]

Yokosuka Works

■ Established in 1971 ■ ISO 14001 (obtained in Mar. 1999)
■ Site area: 523,000 m² ■ Building area: 170,635m²
■ Main products: Stage systems, system controllers, laser processing systems, semiconductor manufacturing equipment (molding machines), precision forgings, ships

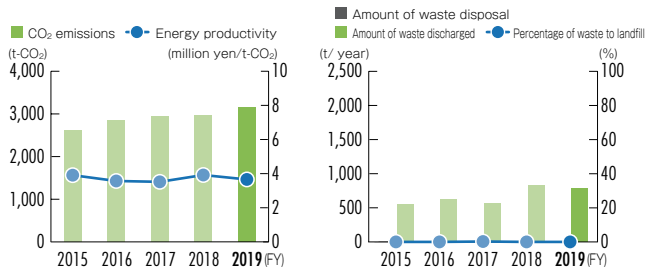


Energy consumption	
Electric power (1,000 kWh)	44,441
Gasoline (kL)	29.83
Kerosene (kL)	0.00
Heavy fuel oil A (kL)	0.00
Light oil (kL)	210.93
LPG (t)	11.06
LNG (t)	0.00
City gas (1,000 m ³)	1,197.34
Water consumption (m ³)	148,138
Atmospheric discharge	
SOx (kg)	—
NOx (kg)	603
Discharge into water	
COD (kg)	418.7
Nitrogen (kg)	270.2
Phosphorus (kg)	56.2

PRTR (kg/year)	Emissions	Transfer volume
Zinc compounds (water-soluble)	361	7
Methyl acrylate	0	0
Acetonitrile	0	17
o-Anisidine	0	0
Ethylbenzene	77,736	0
Ferric chloride	2	47
Cadmium and compounds	2	62
Xylene	118,445	2
Silver and water-soluble compounds	1	71
Glutaraldehyde	0	1
Chromium and chromium (III) compounds	0	11
Chromium (VI) compounds (including lead chromate)	1	130
Chloroform	0	3
Cobalt and compounds	0	0
Dichloromethane	0	1
N,N-Dicyclohexylamine	5	87
N,N-Dimethylformamide	0	0
Mercury and compounds	0	16
Copper salts (water-soluble, except complex salts)	0	6
1,2,4-Trimethylbenzene	60	0
1,3,5-Trimethylbenzene	22	0
Toluene	32,268	83
Lead compounds	0	1
Nickel	0	3
O-Nitroanisole	0	0
Carbon disulfide	0	4
Vanadium compounds	0	0
Polycarbonate	0	0
Arsenic and inorganic compounds	0	0
Hydroquinone	0	4
Pyridine	0	0
Phenol	459	1
Hydrogen fluoride and water-soluble salts	20	19,274
1-Bromopropane	4,236	1,164
Hexamethylene diisocyanate	0	9
n-Hexane	6	95
Water-soluble salts of peroxodisulfuric acid	0	1
Benzene	0	0
Boron and compounds	3	31
Poly (oxyethylene) nonylphenyl ether	0	0
Manganese and compounds	1,055	9,805
Molybdenum and compounds	0	0
Tritolyl phosphate	0	1,577
Triphenyl phosphate	7	138

Okayama Works

■ Established in 1948 ■ ISO 14001 (obtained in Mar. 2000)
■ Site area: 425,000 m² ■ Building area: 78,000 m²
■ Main products: Gear boxes, machine tools, coolant systems

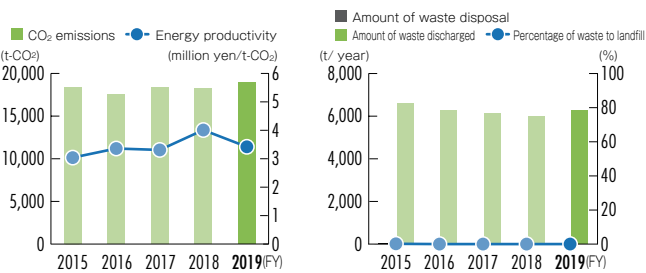


Energy consumption	
Electric power (1,000 kWh)	4,937
Gasoline (kL)	0.24
Kerosene (kL)	0.00
Heavy fuel oil A (kL)	0.00
Light oil (kL)	5.19
LPG (t)	82.84
LNG (t)	0.00
City gas (1,000 m ³)	0.00
Water consumption (m ³)	9,884
Atmospheric discharge	
SOx (kg)	—
NOx (kg)	314
Discharge into water	
COD (kg)	27.2
Nitrogen (kg)	300.8
Phosphorus (kg)	1.3

PRTR (kg/year)	Emissions	Transfer volume
Ethylbenzene	1,179	0
Xylene	2,014	0
1,3,5-Trimethylbenzene	0	0
Toluene	3,886	0

Ehime Works (Niihama Factory)

■ Established in 1888 ■ ISO 14001 (obtained in Nov. 1999)
■ Site area: 418,000 m² ■ Building area: 203,000 m²
■ Main products: Coating equipment, ion accelerators, transporting machines, parking systems, forge rolling machines

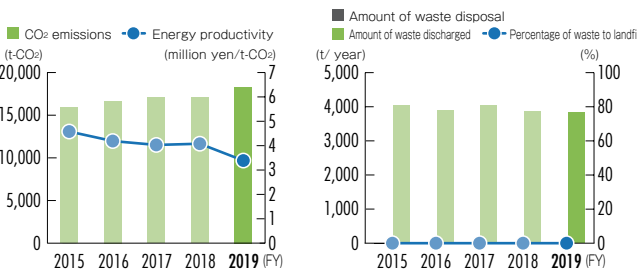


Energy consumption	
Electric power (1,000 kWh)	25,403
Gasoline (kL)	8.30
Kerosene (kL)	4.50
Heavy fuel oil A (kL)	529.00
Light oil (kL)	88.60
LPG (t)	581.50
LNG (t)	229.00
City gas (1,000 m ³)	0.00
Water consumption (m ³)	658,566
Atmospheric discharge	
SOx (kg)	591
NOx (kg)	1,403
Discharge into water	
COD (kg)	164.4
Nitrogen (kg)	540.7
Phosphorus (kg)	4.3

PRTR (kg/year)	Emissions	Transfer volume
Zinc compounds (water-soluble)	0	0
Acetonitrile	0	82
Antimony and compounds	0	0
Bisphenol A (not bisphenol A type liquid epoxy resin)	0	0
Ethylbenzene	27,025	2,275
Ferric chloride	0	0
1-Octanol	0	0
Xylene	39,264	3,577
Cumene	0	0
Chromium and chromium (III) compounds	0	241
Chromium (VI) compounds (including lead chromate)	0	0
Cobalt and compounds	4	1
Ethylene glycol monoethyl ether acetate	0	0
Styrene	14	1
Copper salts (water-soluble, except complex salts)	0	0
Triethylenetetramine	0	0
3,5,5-Trimethyl-1-hexanol	0	0
1,2,4-Trimethylbenzene	148	3
1,3,5-Trimethylbenzene	28	0
Toluene	34,705	3,817
Naphthalene	81	1
Nickel	0	75
Nonylphenol	59	0
n-Butyl benzyl phthalate	70	5
n-Butyl benzyl phthalate	1	0
Hydrogen fluoride and water-soluble salts	3	0
Hexamethylene diisocyanate	24	0
n-Hexane	7	0
Water-soluble salts of peroxodisulfuric acid	0	0
Boron and compounds	38	117
Manganese and compounds	222	655
n-Butyl methacrylate	0	0
1-Methyl-1-phenylethyl hydroperoxide	0	0
Molybdenum and compounds	1	20

Nagoya Works

■ Established in 1961 ■ ISO 14001 (obtained in Jan. 1999)
■ Site area: 293,000 m² ■ Building area: 90,000 m²
■ Main products: Power transmission and controls, gear motors, inverters, construction cranes

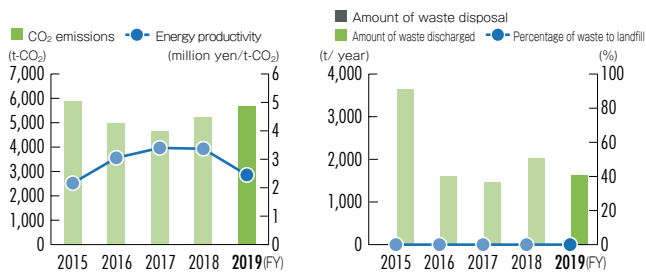


Energy consumption	
Electric power (1,000 kWh)	24,038
Gasoline (kL)	39
Kerosene (kL)	0.31
Heavy fuel oil A (kL)	—
Light oil (kL)	150
LPG (t)	6.2
LNG (t)	0.0
City gas (1,000 m ³)	1,066.12
Water consumption (m ³)	125,602
Atmospheric discharge	
SOx (kg)	—
NOx (kg)	23
Discharge into water	
COD (kg)	778.5
Nitrogen (kg)	80.3
Phosphorus (kg)	3.0

PRTR (kg/year)	Emissions	Transfer volume
Acrylic acid and its solutions	1	0
Ethylbenzene	10,098	588
Xylene	76,303	3,722
Cumene	153	0
Cobalt and compounds	0	0
Styrene	657	70
1,2,4-Trimethylbenzene	6,427	26
1,3,5-Trimethylbenzene	1,735	1,272
Tolylene diisocyanate	0	0
Toluene	23,478	154
Naphthalene	371	0
Nickel	0	1
Water-soluble salts of peroxodisulfuric acid	0	0
Benzene	1	0
Boron and compounds	26	0
Poly (oxyethylene) = alkyl ether (Limit to those with alkyl C=12-15 and its mixture)	4	0
Manganese and compounds	29	53
n-Butyl methacrylate	0	0
Methyl methacrylate	115	0
α-Methylstyrene	115	0
1-Methyl-1-phenylethyl hydroperoxide	2	0
Methylenebis (4,1-phenylene) = diisocyanate	0	5
Molybdenum and compounds	0	0

Ehime Works (Saijo Factory)

■ Established in 1973 ■ ISO 14001 (obtained in Feb. 1999)
■ Site area: 535,036 m² ■ Building area: 83,104 m²
■ Main products: Pressure vessels, stirring/mixing machines, coke oven machines, steel structures



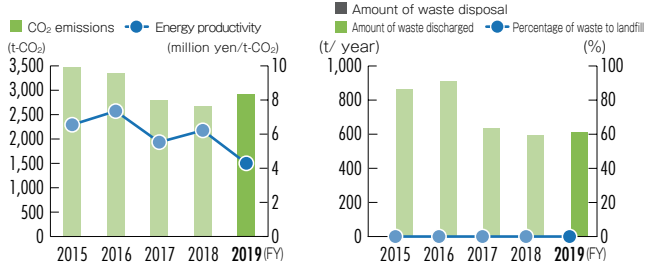
Energy consumption	
Electric power (1,000 kWh)	8,511
Gasoline (kL)	7.37
Kerosene (kL)	0.00
Heavy fuel oil A (kL)	4.65
Light oil (kL)	46.38
LPG (t)	183.86
LNG (t)	0.00
City gas (1,000 m ³)	0.00
Water consumption (m ³)	76,353
Atmospheric discharge	
SOx (kg)	44
NOx (kg)	193
Discharge into water	
COD (kg)	392.2
Nitrogen (kg)	507.9
Phosphorus (kg)	36.8

PRTR (kg/year)	Emissions	Transfer volume
Ethylbenzene	2,306	2,132
Xylene	8,536	7,021
Styrene	8	9
1,2,4-Trimethylbenzene	354	523
1,3,5-Trimethylbenzene	82	131
Toluene	3,209	3,007
Naphthalene	23	18
Phenol	0	0
Hexamethylene diisocyanate	16	13

[Environmental load data for Group companies in Japan (outside of Works)]

Shin Nippon Machinery Co., Ltd.

Main products: Turbines, pumps

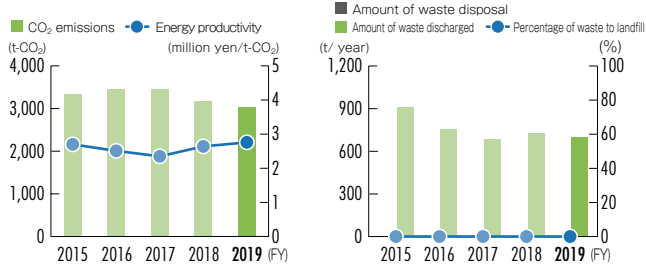


Energy consumption	
Electric power (1,000 kWh)	4,111.9
Gasoline (kL)	0.0
Kerosene (kL)	191.9
Heavy fuel oil A (kL)	0.0
Light oil (kL)	3.1
LPG (t)	5.5
City gas (1,000 m ³)	0.1
Water consumption (m ³)	16,558
Atmospheric discharge	
Sox (kg)	6
Nox (kg)	353
Discharge into water	
COD (kg)	—
Nitrogen (kg)	—
Phosphorus (kg)	—

PRTR (kg/year)	Emissions	Transfer volume
2-Aminoethanol	12	1
Antimony and compounds	8	1
Ethylbenzene	739	80
Xylene	2,444	263
Cumene	56	6
Chromium and chromium (III) compounds	13	1
Cobalt and compounds	72	8
Styrene	1	0
1,2,4-Trimethylbenzene	2,023	225
1,3,5-Trimethylbenzene	643	71
Toluene	540	52
Naphthalene	0	0
Nickel compounds	0	0
Vanadium compounds	2	0
Di-n-butyl phthalate	0	0
n-Butyl benzyl phthalate	0	0
Hexamethylene diisocyanate	0	0
Manganese and compounds	8	1
n-Butyl methacrylate	1	0

Sumitomo Heavy Industries Gearbox Co., Ltd.

Main products: Gear reducers

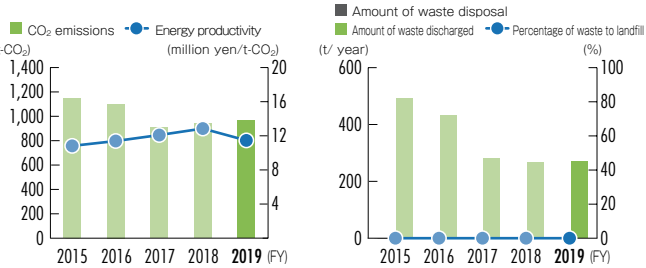


Energy consumption	
Electric power (1,000 kWh)	4,712.5
Gasoline (kL)	0.8
Kerosene (kL)	0.9
Heavy fuel oil A (kL)	0.0
Light oil (kL)	1.5
LPG (t)	8.4
City gas (1,000 m ³)	108.0
Water consumption (m ³)	9,500
Atmospheric discharge	
Sox (kg)	—
Nox (kg)	19

PRTR (kg/year)	Emissions	Transfer volume
Ethylbenzene	59	115
Ethylene glycol monoethyl ether (2-Ethoxyethanol)	11	21
Xylene	113	226
Styrene	0	4
1,3,5-Trimethylbenzene	5	12
Toluene	3,301	6,604
Lead	17	33
Hexamethylene diisocyanate	2	4
Methyl methacrylate	0	4

Nihon Spindle Mfg. Co., Ltd.

Main products: Industrial instruments, environmental equipment

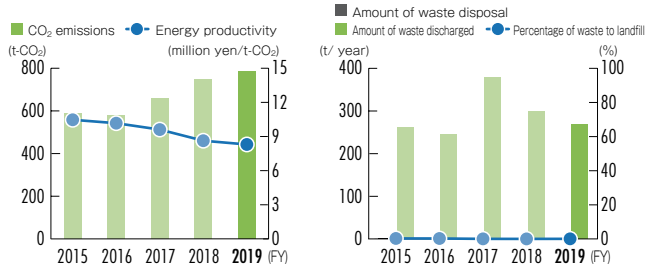


Energy consumption	
Electric power (1,000 kWh)	1,529.0
Gasoline (kL)	2.2
Kerosene (kL)	0.0
Heavy fuel oil A (kL)	0.0
Light oil (kL)	0.0
LPG (t)	0.0
City gas (1,000 m ³)	27.3
Water consumption (m ³)	9,589
Atmospheric discharge	
Sox (kg)	—
Nox (kg)	—

PRTR (kg/year)	Emissions	Transfer volume
Ethylbenzene	422	431
Xylene	664	645
Chromium (VI) compounds (including lead chromate)	1	1
Cobalt and compounds	0	0
Styrene	0	0
1,2,4-Trimethylbenzene	12	13
1,3,5-Trimethylbenzene	4	6
Toluene	1,136	1,008
Naphthalene	0	0
Vanadium compounds	1	0
Benzene	1	0
Formaldehyde	22	24

Sumitomo Heavy Industries Modern, Ltd.

Main products: Plastic extrusion molding machines

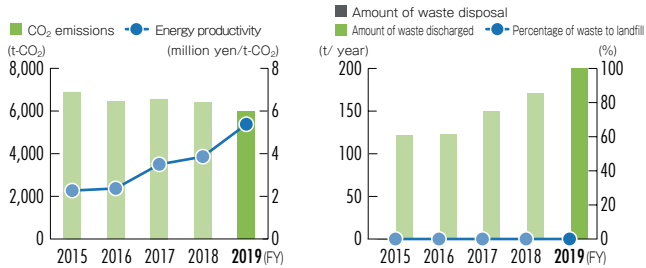


Energy consumption	
Electric power (1,000 kWh)	1,228.5
Gasoline (kL)	0.0
Kerosene (kL)	0.0
Heavy fuel oil A (kL)	0.0
Light oil (kL)	23.4
LPG (t)	0.4
City gas (1,000 m ³)	0.0
Water consumption (m ³)	2,786
Atmospheric discharge	
Sox (kg)	—
Nox (kg)	—

PRTR (kg/year)	Emissions	Transfer volume
Ethylbenzene	806	0
Xylene	964	0
Cumene	0	0
1,2,4-Trimethylbenzene	29	0
1,3,5-Trimethylbenzene	17	0
Toluene	4,821	0
Di-n-butyl phthalate	45	0

Sumitomo Heavy Industries Ion Technology Co., Ltd.

Main products: Ion implanters

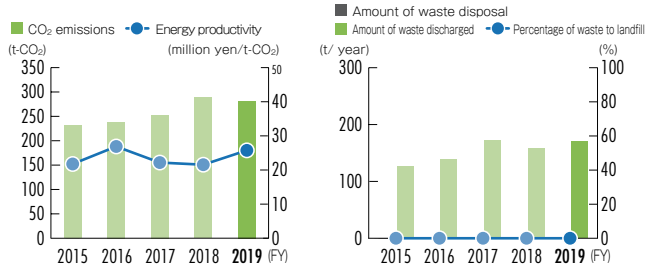


Energy consumption	
Electric power (1,000 kWh)	10,196.1
Gasoline (kL)	—
Kerosene (kL)	—
Heavy fuel oil A (kL)	—
Light oil (kL)	—
LPG (t)	—
City gas (1,000 m ³)	—
Water consumption (m ³)	19,051
Atmospheric discharge	
Sox (kg)	—
Nox (kg)	—

PRTR (kg/year)	Emissions	Transfer volume
2-Aminoethanol	0	6.00
Antimony and compounds	0	0.20
Ethylene glycol monomethyl ether (2-Ethoxyethanol)	0	6.60
Toluene	0	13.92
Arsenic and inorganic compounds	0	0.54
Hydrogen fluoride and water-soluble salts	0	4.00
Boron and compounds	0	0.75
Molybdenum and compounds	0	0.36

Izumi Food Machinery Co., Ltd.

Main products: Food processing machinery

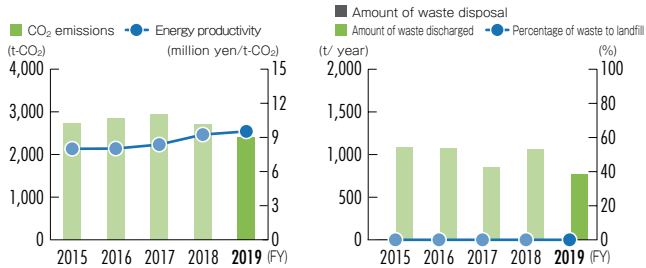


Energy consumption	
Electric power (1,000 kWh)	457.2
Gasoline (kL)	0.0
Kerosene (kL)	0.0
Heavy fuel oil A (kL)	0.3
Light oil (kL)	0.0
LPG (t)	0.0
City gas (1,000 m ³)	5.8
Water consumption (m ³)	3,528
Atmospheric discharge	
Sox (kg)	—
Nox (kg)	—

PRTR (kg/year)	Emissions	Transfer volume
Ethylbenzene	0	0
Xylene	0	0
Chromium (VI) compounds (including lead chromate)	0	0
Cobalt and compounds	0	0
Triethylenetetramine	0	0
1,2,4-Trimethylbenzene	0	0
1,3,5-Trimethylbenzene	0	0
Toluene	0	0
Lead compounds	0	0
Di-n-butyl phthalate	0	0
Hydrogen fluoride and water-soluble salts	9	0
n-Hexane	0	0
1-Methyl-1-phenylethyl = Hydroperoxide	0	0

Sumitomo NACCO Forklift Co., Ltd.

Main products: Forklifts

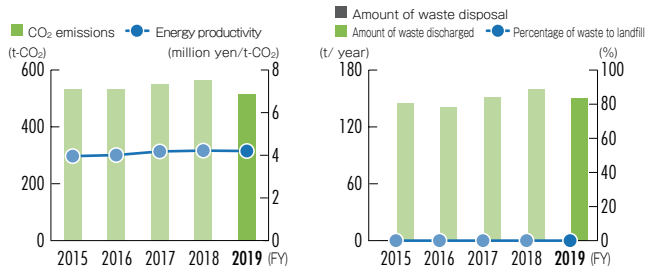


Energy consumption	
Electric power (1,000 kWh)	3,058.4
Gasoline (kL)	5.1
Kerosene (kL)	0.0
Heavy fuel oil A (kL)	0.0
Light oil (kL)	12.3
LPG (t)	0.0
City gas (1,000 m ³)	250.0
Water consumption (m ³)	8,689
Atmospheric discharge	
Sox (kg)	—
Nox (kg)	—

PRTR (kg/year)	Emissions	Transfer volume
Zinc compounds (water-soluble)	0	65
Ethylbenzene	8,328.74	410
Ethylene glycol monoethyl ether (2-Ethoxyethanol)	97.21	5
Ethylenediamine	36.90	2
Xylene	18,056.41	890
Cumene	96.94	5
Ethylene glycol monoethyl ether acetate	235.29	12
Styrene	2.02	0
1,2,4-Trimethylbenzene	2,842.39	140
1,3,5-Trimethylbenzene	1,867.31	92
Toluene	6,558.17	323
Naphthalene	305.21	15
Nickel compounds	5.72	0
Di-n-butyl phthalate	3.92	0
Hexamethylene diisocyanate	41.23	2
Boron and compounds	893.22	45
Formaldehyde	28.29	1
Manganese and compounds	8.38	0
n-Butyl methacrylate	124.97	6
Methyl methacrylate	2.03	0
α-Methylstyrene	8.87	0

SFK Co., Ltd

Main products: Bolts, nuts, precision screws



Energy consumption	
Electric power (1,000 kWh)	840.3
Gasoline (kL)	0.4
Kerosene (kL)	7.8
Heavy fuel oil A (kL)	0.0
Light oil (kL)	0.0
LPG (t)	0.7
City gas (1,000 m ³)	0.0
Water consumption (m ³)	692
Atmospheric discharge	
Sox (kg)	—
Nox (kg)	—
Discharge into water	
COD (kg)	3.7
Nitrogen (kg)	—
Phosphorus (kg)	—

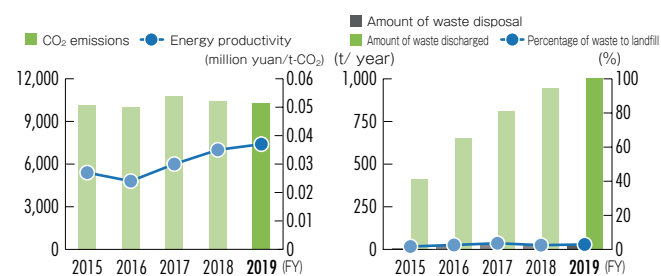
Complete elimination of PRTR substances

Group companies in Japan that have independently received ISO 14001 certification

Group company	Date of certification	Group company	Date of certification
Sumitomo NACCO Forklift Co., Ltd.	Mar. 2000	Nihon Spindle Mfg. Co., Ltd.	Mar. 2006
Shin Nippon Machinery Co., Ltd.	Feb. 2002	Japan Electron Beam Irradiation Service Co., Ltd.	Jan. 2007
Izumi Food Machinery Co., Ltd.	Jun. 2002	Sumitomo Heavy Industries Power Transmission & Controls Sales Co., Ltd.	Sept. 2007
Sumitomo Heavy Industries Ion Technology Co., Ltd.	Oct. 2002	SFK Co., Ltd.	Aug. 2008
Sumitomo Heavy Industries Modern, Ltd.	Oct. 2002	Sumitomo Heavy Industries Gearbox Co., Ltd.	Aug. 2009
Sumitomo Heavy Industries Environment Co., Ltd.	Nov. 2002	Sumitomo Heavy Industries Modern, Ltd.	Dec. 2009
Lightwell Co., Ltd.	Feb. 2005	Kyokuto Seiki Co., Ltd.	Feb. 2015

[Environmental load data for main overseas Group companies]

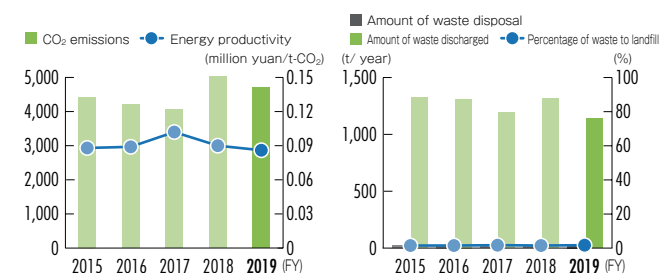
Sumitomo Heavy Industries (Tangshan), Ltd. Country: China Main products: Power transmission and controls



Energy consumption	
Paper (A4 1,000 sheets)	869
Electric power (1,000 kWh)	9,869
Gasoline (kL)	—
Heavy fuel oil (kL)	—
Light oil (kL)	—
LPG (t)	—
Natural gas (1,000 m ³)	1,191
Water consumption (m ³)	30,534

Atmospheric discharge	
VOC emissions (t/year)	Less than 1 t
SOx emissions (t/year)	0.67
NOx emissions (t/year)	1.8

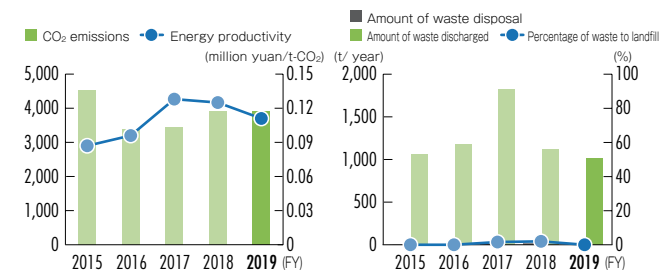
Sumitomo (SHI) Cyclo Drive China, Ltd. Country: China Main products: Power transmission and controls



Energy consumption	
Paper (A4 1,000 sheets)	1,128
Electric power (1,000 kWh)	5,009
Gasoline (kL)	—
Heavy fuel oil (kL)	—
Light oil (kL)	287
LPG (t)	—
Natural gas (1,000 m ³)	—
Water consumption (m ³)	22,353

Atmospheric discharge	
VOC emissions (t/year)	1.6
SOx emissions (t/year)	0.004
NOx emissions (t/year)	0.08

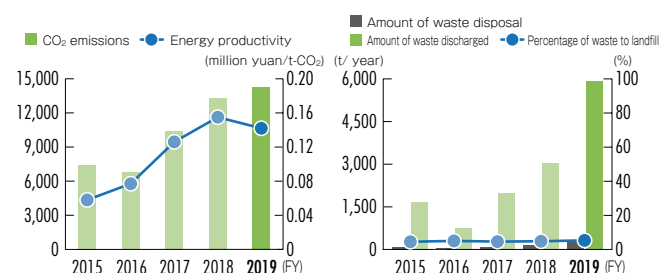
Ningbo Sumiju Machinery, Ltd. Country: China Main products: Plastic injection molding machines, components for power transmission equipment



Energy consumption	
Paper (A4 1,000 sheets)	580
Electric power (1,000 kWh)	4,908
Gasoline (kL)	—
Heavy fuel oil (kL)	—
Light oil (kL)	14
LPG (t)	—
Natural gas (1,000 m ³)	—
Water consumption (m ³)	16,377

Atmospheric discharge	
VOC emissions (t/year)	1.4
SOx emissions (t/year)	—
NOx emissions (t/year)	—

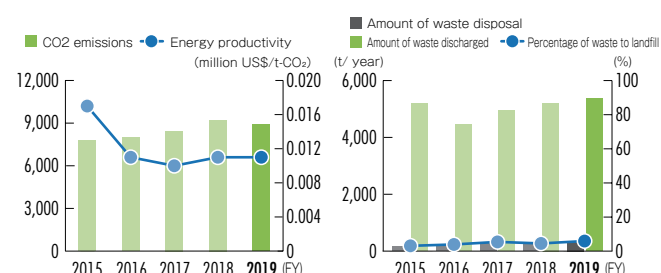
Sumitomo (S.H.I.) Construction Machinery (Tangshan) Co., Ltd. Country: China Main products: Hydraulic excavators, road machinery



Energy consumption	
Paper (A4 1,000 sheets)	1,037
Electric power (1,000 kWh)	13,599
Gasoline (kL)	—
Heavy fuel oil (kL)	—
Light oil (kL)	34
LPG (t)	31
Natural gas (1,000 m ³)	1,621
Water consumption (m ³)	72,501

Atmospheric discharge	
VOC emissions (t/year)	45.4
SOx emissions (t/year)	0.4
NOx emissions (t/year)	3.97

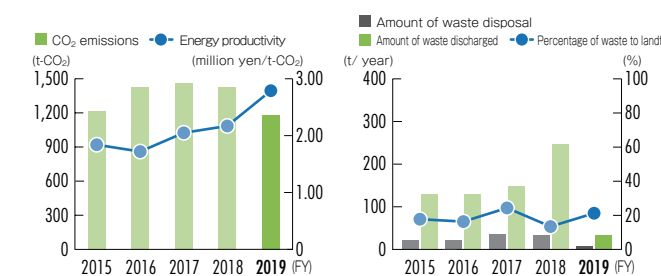
Sumitomo Heavy Industries (Vietnam) Co., Ltd. Country: Vietnam Main products: Power transmission and controls, motors



Energy consumption	
Paper (A4 1,000 sheets)	6,108
Electric power (1,000 kWh)	18,504
Gasoline (kL)	—
Heavy fuel oil (kL)	—
Light oil (kL)	—
LPG (t)	471
Natural gas (1,000 m ³)	—
Water consumption (m ³)	36,466

Atmospheric discharge	
VOC emissions (t/year)	1.3
SOx emissions (t/year)	—
NOx emissions (t/year)	—

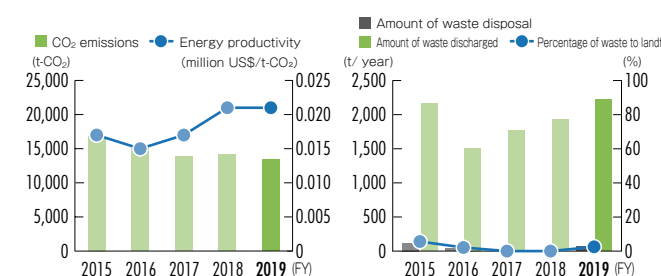
SHI Manufacturing & Service (Philippines) Inc. Country: Philippines Main products: Precision parts and components



Energy consumption	
Paper (A4 1,000 sheets)	860
Electric power (1,000 kWh)	2,354
Gasoline (kL)	2
Heavy fuel oil (kL)	3
Light oil (kL)	—
LPG (t)	1
Natural gas (1,000 m ³)	—
Water consumption (m ³)	15,071

Atmospheric discharge	
VOC emissions (t/year)	Less than 1 t
SOx emissions (t/year)	—
NOx emissions (t/year)	—

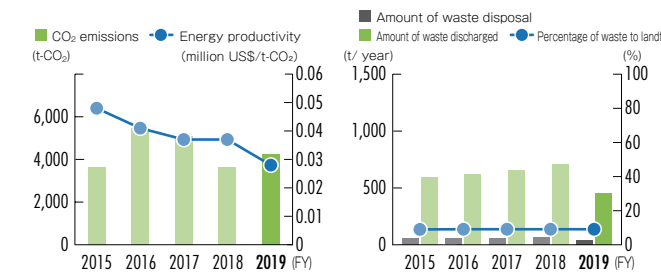
Link-Belt Cranes, L.P., LLLP Country: US Main products: Construction cranes



Energy consumption	
Paper (A4 1,000 sheets)	1,587
Electric power (1,000 kWh)	16,280
Gasoline (kL)	—
Heavy fuel oil (kL)	—
Light oil (kL)	—
LPG (t)	—
Natural gas (1,000 m ³)	1,972
Water consumption (m ³)	27,084

Atmospheric discharge	
VOC emissions (t/year)	36.4
SOx emissions (t/year)	0.02
NOx emissions (t/year)	3.14

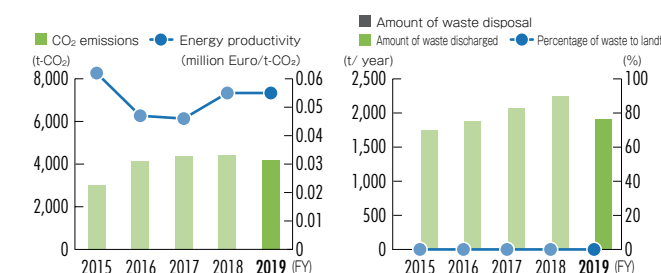
Sumitomo Machinery Corporation of America Country: US Main products: Power transmission and controls



Energy consumption	
Paper (A4 1,000 sheets)	994
Electric power (1,000 kWh)	6,670
Gasoline (kL)	—
Heavy fuel oil (kL)	—
Light oil (kL)	—
LPG (t)	9
Natural gas (1,000 m ³)	193
Water consumption (m ³)	2,398

Atmospheric discharge	
VOC emissions (t/year)	1.5
SOx emissions (t/year)	—
NOx emissions (t/year)	—

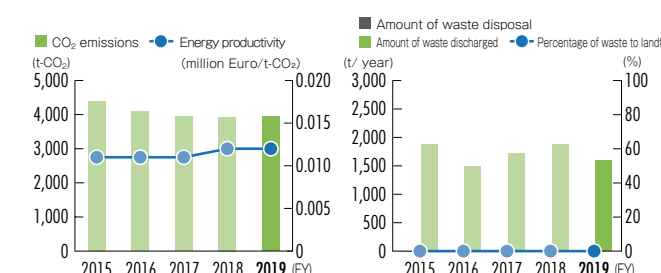
Sumitomo (SHI) Demag Plastics Machinery GmbH Country: Germany Main products: Plastic molding machines



Energy consumption	
Paper (A4 1,000 sheets)	4,984
Electric power (1,000 kWh)	7,890
Gasoline (kL)	—
Heavy fuel oil (kL)	—
Light oil (kL)	1
LPG (t)	190
Natural gas (1,000 m ³)	405
Water consumption (m ³)	11,402

Atmospheric discharge	
VOC emissions (t/year)	8.4
SOx emissions (t/year)	—
NOx emissions (t/year)	—

Hansen Industrial Transmissions NV Country: Belgium Main products: Power transmission and controls



Energy consumption	
Paper (A4 1,000 sheets)	1,548
Electric power (1,000 kWh)	7,807
Gasoline (kL)	—
Heavy fuel oil (kL)	—
Light oil (kL)	—
LPG (t)	—
Natural gas (1,000 m ³)	894
Water consumption (m ³)	4,611

Atmospheric discharge	
VOC emissions (t/year)	2.9
SOx emissions (t/year)	—
NOx emissions (t/year)	1.26