ENVIRONMENTAL INITIATIVES



Environmental Activity Report

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• Sumitomo Heavy Industries, Ltd.

Sumitomo Heavy Industries Group

Key Issues in the 5th Medium-Term **Environmental Plan**

The Sumitomo Heavy Industries Group has been developing a growth strategy in anticipation of global markets. Under the 5th Medium-Term Environmental Plan, we are promoting activities to address the following four key issues globally.



(1) Strengthening of environmental risk management

The Sumitomo Heavy Industries Group aims to prevent environmental incidents and continually improve and vitalize its environmental management system.

(2) Reduction of CO₂ emissions in product life cycle

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

(3) Reduction of environmental impacts associated with business activities

Among the environmental impacts in the product life cycle, we will work to reduce environmental impacts associated with business activities other than CO₂ emissions.

(4) Conservation of biodiversity

We will work mainly on reduction of environmental impacts in the product life cycle, as this has the largest impact on biodiversity, including contribution to the reduction of CO₂ emissions.

CO₂ emissions reduction in the entire product life cycle and contribution to CO₂ reduction in product use

Of CO₂ emissions in the entire product life cycle, CO₂ emissions in product use (excluding energy devices and biomass) were so significant at approximately 20 million tons. The CO₂ emissions reduction effect in product use in FY2018 was 1,690,000 t. Together with the reduction of CO₂ emissions in manufacturing, contributing to society by improving this figure is an important priority.



Indust machi and ot

Total







CO2 emissions in product life cycle in FY2018





5th Medium-Term Environmental Plan

Excellent Eco Factory

(10,000 t-CO₂)

2020

Contribution to CO₂ reduction through products (Main products delivered during FY2018)

ld	Contribution to CO ₂ emission reduction in product life cycle (based on design standard)	Basis for calculation	Product
-	643.0	Reduction and higher efficiency through biomass	CFB boiler, turbine
on-	83.3	Improved fuel efficiency and propulsion through model changes, etc.	Aframax tanker
al ery ners	85.3	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.
	811.6		



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
- $\ensuremath{\mathsf{5}}.$ Compliance with laws and other regulations
- 6. Strengthening and continuous improvement of the environmental management system

Sumitomo Heavy Industries, Ltd. May 1, 2017

Environmental management audit

Conducting audits on each Works/Group company in Japan and each overseas subsidiary company

The Environmental Management Department of the Head Office conducts environmental audits on each Works and Group company in Japan once a year. Audits are conducted on environmental risk assessments, global warming prevention activities, and overall environmental management. The audit results are evaluated on a scale of 1 to 5 for each department based on our own evaluation criteria, and the evaluation results are reported in the operating officer meeting to promote improvements.

In addition, the Environmental Management Department of each overseas subsidiary company conducts audits in a planned manner, taking into account environmental impacts of each company, with the primary aim of achieving the targets for environmental risk reduction and global warming prevention activities. As with Group companies in Japan, the audit results are evaluated on a scale of 1 to 5 and reported in the executive board. Audits were conducted on two plants in Vietnam and six plants in China in FY2018.

Environmental Targets (Medium-Term Plan) and Accomplishment

Overview of environmental impacts in FY2018 (SHI Group companies in Japan)



Environmental accounting in FY2018

Active investment in maintenance and administration of ISO 14001 standards

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

	Costs for environmental preservation Effectiveness of environmental preservation					nvironmental preservation			
				Investment Cost		Economic effect			
	Category	Main efforts	FY2017	FY2018	FY2017	FY2018	FY2017	FY2018	IVIain effects
(1) Cos bus	ts within the iness area	Maintenance/depreciation of environmental impact reduction equipment or facilities	598	2,976	834	1,329	247	322	
	(1)-1 Pollution prevention costs	Maintenance and management of air and water pollution prevention equipment or facilities, and measurement of noise/vibration	46	42	352	256	0	0	
Break- down	(1)-2 Global environmental conservation costs	Investments in energy saving measures (power monitoring, energy saving equipment, and upgrade of lighting systems, etc.)	528	430	82	58	73	44	Cost reduction by energy/resource saving and 3Rs
	(1)-3 Resource recycling costs	Investments in waste reduction and resource recovery (recycle and reuse)	24	11	400	482	174	278	Cost reduction by waste reduction Sales value of valuable resources
(2) Ups cos	tream/downstream ts	Reduction of product packaging materials, recycling of home electric appliances, and use of both sides of paper	1	1	1	1	0	0	
(3) Mar	nagement activity costs	Maintenance and administration of ISO 14001 standards, and expansion of green spaces	7	14	138	154	0	0	
(4) Res	earch & development ts	Research and development for environmental impact reduction of products and research and development of environmental equipment	3,498	2,449	1,131	495	0	0	
(5) Social activity costs		Global environmental preservation and greening activities	0	0	11	1	0	0	
(6) Costs for handling environmental damage		Levies on air pollution loads and cost of green belts and pollution compensation	0	0	0	0	0	0	
		Total	4,103	2,997	2,115	1,447	247	322	





*1 PRTR: Pollutant Release and Transfer Register *2 VOC: Volatile Organic Compounds

Environmental Targets (Medium-Term Plan) and Accomplishment

General overview of 5th Medium-Term Environmental Plan (2017–2019) and FY2018 activities

Achieved 16 of 20 items

The achievement status of FY2018 targets and FY2018 activities in the 5th Medium-Term Environmental Plan with final targets for FY2019 are as follows.

Evaluation: \bigcirc Achieved \triangle Achievement rate of 90% or more \times Achievement rate of less than 90%

Index	Item	5th Medium-Term Environmental Plan (2017–2019)	FY2018 target	Achievement in FY2018	Evalu- ation
	1. Review of Environmen- tal 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 	0
2. Prevention of environ- mental accidents through environmental risk reduction		• Zero major environmental accidents • No more than 3 environmental accidents	 Zero major environmental accidents No more than 3 environmental accidents 	 Zero major environmental accidents 7 environmental accidents occurred 	O ×
environ- mental risk manage- ment	3. Continual improve- ment of environmental management systems in overseas operations	 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 	 Implemented education at the time of environmental audit Continued activities using mother plants in Japan as a reference 	0
	4. Promotion of manage- ment 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) 	 Verified the management status in environmental audits 	0
	5. Responding to ISO 14001 revision	 Responding to ISO 14001: 2015 revision 	 Responding to ISO 14001: 2015 revision 	 All departments have completed transition to the 2015 edition 	0
CO ₂	1. CO2 emissions reduction in product manufacturing	Energy productivity (Japan) 3% increase compared to FY2016 (Overseas) 3% increase compared to FY2016	Energy productivity (Japan) 2% increase compared to FY2016 (Overseas) 2% increase compared to FY2016	Energy productivity (Japan) 8.6% increase compared to FY2016 (Overseas) 29% increase compared to FY2016	0
emissions reduction in product life cycle	2. CO ₂ emissions reduction in product use	Calculation and publication of the total amount of contribution to CO ₂ reduction in product use (Japan)	 Calculation and publication of the total amount of contribution to CO₂ reduction in product use (Japan) 	 Published the total amount of contri- bution to CO₂ reduction in product use in Integrated Report (Japan) 	0
and eyele	 CO₂ emissions reduction in product shipping (green logistics) 	 Reduction: 3% reduction per basic unit of shipping weight compared to FY2016 (Japan) 	Reduction: 2% reduction per basic unit of shipping weight compared to FY2016 (Japan)	• Reduction: 3.5% reduction per basic unit of shipping weight compared to FY2016 (Japan)	0
	1. Reduction of VOC emissions	• Maintaining a reduction amount of 34% compared to FY2006 (Japan, 2 departments): Total amount of use (Japan, others): Per basic unit of sales • Maintaining a reduction amount of 3% compared to FY2013 (Overseas): Per basic unit of sales	 Maintaining a reduction amount of 34% compared to FY2006 (Japan, 2 departments): Total amount of use (Japan, others): Per basic unit of sales Maintaining a reduction amount of 2% compared to FY2013 (Overseas): Per basic unit of sales 	 Reduced amount compared to FY2006 (Japan, 2 departments): 52.2% reduction in total amount of use (Japan, others): 46.0% reduction per basic unit of sales Reduced amount compared to FY2013 (Overseas): 61% reduction per basic unit of sales 	0
	2. Planned disposal of PCB waste	· Planned disposal	· Planned disposal	 Verified the disposal status in environmental audits for continued disposal 	0
Reduction of envi- ronmental impacts in business activities	3. Reduction and effective use of waste generated	 Amount of reduction per basic unit of sales (Japan) 6% reduction compared to FY2013 (Overseas) 6% reduction compared to FY2013 (Japan) Maintaining a landfill disposal rate of less than 0.5% (Overseas) Maintaining a non-landfill waste disposal rate of 95% 	 Amount of reduction per basic unit of sales (Japan) 5% reduction compared to FY2013 (Overseas) 5% reduction compared to FY2013 (Japan) Maintaining a landfill disposal rate of less than 0.5% (Overseas) Maintaining a non-landfill waste disposal rate of 95% 	 Amount of reduction per basic unit of sales (Japan) 0.3% increase compared to FY2013 (Overseas) 8% increase compared to FY2013 (Japan) Landfill disposal rate of 0.032% (Overseas) Non-landfill waste disposal rate of 97% 	× × O O
	4. Reduction of product packaging materials	 Amount of reduction per basic unit of sales 6% reduction compared to FY2013 (Japan) 	 Amount of reduction per basic unit of sales 5% reduction compared to FY2013 (Japan) 	 Amount of reduction per basic unit of sales 28% reduction compared to FY2013 (Japan) 	0
	5. Reduction of water consumption	 Amount of reduction in total amount of use (Japan) Maintaining the average amount used in FY2014-2016 Amount of reduction per basic unit of sales (Overseas) 3% reduction compared to FY2013 	 Amount of reduction in total amount of use (Japan) Maintaining the average amount used in FY2014-2016 Amount of reduction per basic unit of sales (Overseas) 2.5% reduction compared to FY2013 	 Amount of reduction in total amount of use (Japan) 8.6% increase compared to the average amount used in FY2014-2016 Amount of reduction per basic unit of sales (Overseas) 37% reduction compared to FY2013 	×
Conser-	1. Reduction of CO ₂ emissions in product life cycle	· Promotion of key Issues	Promotion of key Issues	· Efforts of each department are promoted as key Issues	0
bio- diversity	2. Tree planting around offices	Continuation of greening of plants	Continuation of greening of plants	 Verified greening plans of each manufacturing base and the imple- mentation status in environmental accounting 	0

Global Warming Prevention Activities

The SHI Group has been working on the reduction of CO₂ emissions, which we regard as the most important issue in every stage of our business activities.

Promotion of environmental management

Promoting full-participation efforts

The SHI Group regards global warming prevention activities as part of environmental management, and the results are managed each month by the Environmental Management Department and fed back to persons in charge of business operations. In addition, the results are also reported to the management three times a year at the operating officer meetings.

Each department of the SHI Group works on fullparticipation efforts and visualization of activities as well as various process improvement activities for further improving efficient energy use to promote global warming prevention activities.

Reduction of CO₂ emissions

CO₂ is on an increasing trend across the entire Group

The overall CO₂ emissions for the entire SHI Group in FY2018 increased by 12% compared to FY2016.

The three major contributing factors for this were as follows.

- An increase in energy usage following an increase in production
- An increase in power usage associated with research and development (constant temperature rooms, clean rooms, and test runs, etc.)
- An increase in air conditioning for ensuring product quality and preventing heat stroke among workers.

The SHI Group is promoting global warming prevention activities among all its employees, and is working to reduce CO₂ emissions.



* FY2016 CO₂ emission factor (alternative value) of 5.87 (t-CO₂/10,000 kWh) is used as a fixed value.

Improvement of energy productivity

Achieved the energy productivity targets both in Japan and overseas

For production activities, which account for the majority of CO₂ emissions in the SHI Group, energy productivity (sales/CO₂ emissions, the inverse of emissions per basic unit) is used to carry out monthly management and operation of each BU (business unit).

In FY2018, as a result of carrying out activities with the target of a 2% improvement compared to FY2016, main production bases in Japan achieved the target with an 8.6% improvement.

As for overseas production bases, as a result of promoting activities with the target of improving energy productivity by 2% compared to FY2016, the target was achieved with a 29% improvement in FY2018.

We will continue to promote the following measures.

- (1) Setting and practicing of no operation days
- (2) Reduction of standby power of equipment or facilities
- (3) Efficient operation of equipment or facilities
- (4) Reduction of energy consumption by reducing production lead time



Global Warming Prevention Activities

Promotion of green logistics

Promoting load factor improvement, modal shift, and effective utilization of modal mix

We have been working on the reduction of CO₂ emissions by eliminating waste and streamlining in shipping.

Promotion activities, including load factor improvement, modal shift, and effective utilization of modal mix, etc., have been continued with the target of a 2% reduction compared to FY2016. In FY2018, the target was achieved with a decrease of 3.5% in per basic unit of shipping (t-CO₂/weight).

In FY2019, we will continue activities such as modal shift promotion and load factor improvement.





Plastics machinery



Contribution to CO₂ emissions reduction in product use

Calculating the contribution to CO₂ reduction in product use

Under the 5th Medium-Term Environmental Plan, contribution to CO₂ emissions reduction in product use is to be calculated and disclosed for each business unit. Contribution to CO₂ reduction in use of products sold in FY2018, excluding energy-related equipment, was approximately 1,690,000 t-CO₂, which is approximately 15 times the total CO₂ emissions in production for the SHI Group. Adding to this value the contribution of biomass boilers, power generating turbines, and related products yields a contribution to CO₂ for the SHI Group.





Aframax Tanker ALFA FINLANDIA



Recycling-Oriented Society Activities

We have been making efforts to control waste emissions effectively use waste generated.

Environmental impact reduction efforts 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

Achieved the target of emissions per basic unit of sales in Japan

In Japan, the FY2018 target was a 5% reduction of the volume of waste generated per basic unit of sales compared to FY2013, and we worked on streamlining production activities, eliminating waste, and controlling scrap metal and other emissions. However, partly due to the impact of natural disasters such as torrential rains and the arrival of typhoons, we saw a 0.3% increase compared to FY2013. For overseas subsidiary companies, we conducted activities targeting a 5% reduction compared to FY2013, but they resulted in an increase of 8% in FY2018.





Zero emissions

Zero emissions were achieved at all SHI Group companies in FY2018

In Japan, the SHI Group defines a plant with the ratio of landfill disposal volume to waste generation volume (percentage of waste to landfill) of less than 0.5% as a zeroemission plant. We have been implementing measures since FY2005, and in FY2018, all Works (6 Works and 7 plants) and all sites of Group companies outside of Works (9

We have been making efforts to control waste emissions and so forth from business activities and recycle and

companies) except 1 achieved zero emissions. The one Group company that did not achieve zero emissions saw its percentage of waste to landfill deteriorate after conducting specially-controlled industrial waste disposal in an operation to remove debris after a typhoon made landfall. In addition, for the entire SHI Group, the target was exceedingly achieved with the percentage of waste to landfill of 0.032%, having continuously achieved zero emissions since FY2011.

Overseas, we have conducted initiatives with the target of achieving the percentage of waste to landfill of less than 5%. In FY2018, the target was achieved at 2.85%. In total in Japan and overseas, the percentage of waste to landfill was 1.2% in FY2018. Recycling through waste segregation is important for achieving zero emissions. We intend to continue strict waste segregation to maintain zero emissions in the future with the aim of establishing plants that contribute to a recycling-oriented society.



Reduction of water consumption Water consumption in Japan is on an increasing trend

In the SHI Group, as a result of continued reduction of water consumption, unnecessary water consumption is deemed to have been almost entirely eliminated. In the 5th Medium-Term Environmental Plan, a target is set for Group companies in Japan to maintain the average water consumption of the previous three years (2014–2016 for FY2018). In FY2018, the target was not achieved, with an increase of 8.6%. This was mainly due to sprinkling of water as measures against a heat wave and use of water for cleaning after a typhoon. We aim to achieve the target by continuing to work on the reduction of water consumption.

► Wate	r consumption					onsumption per l	pasic unit in Japan ation per basic unit
📕 In Japan	Overseas				Total wa	ater consumption	per basic unit
(thousand m ³) 1,500-	1,395	1,394	1,387	1 <u>,40</u> 4	1,501	1,463	(m³/million yen) - 10.0
1,200-	<mark>266</mark>	<mark>248</mark>	245	<mark>239</mark>	275	334	- 8.0
900-	1,129	1,146	1,14 <mark>3</mark>	1 <mark>,16</mark> 6	1 <mark>,22</mark> 6	1,129	- 6.0
600-	2.52 2.36	2.60 2.38	2.40 2.26	2.28 2.04	2.21		- 4.0
300-	8						- 2.0
ol	1.84	1.72	1./8	1.35	1.28		0
	2014–2016 average reference	2015	2016	2017	2018	2019 target	(FY)

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 covered by the Soil Contamination Countermeasures Act

We continue to work on complete elimination of organic chemicals covered by the Soil Contamination Countermeasures Act, namely dichloromethane, tetrachloroethylene, and trichloroethylene.

Complete elimination of ozone-depleting substances

We have completely eliminated (and will continue to ban) the use of ozone-depleting substances HCFC-225 and HCFC-141b since FY2008 and FY2010, respectively. We are promoting systematic renewal of R-22 that will cease production in FY2020.

Elimination control of VOC substances

Group companies in Japan achieved a 34% reduction of emissions compared to FY2006 and a 44% 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 the SHI Group. We are working on a target of maintaining at least a 34% reduction compared to FY2006.

In FY2018, we achieved a 34% reduction compared to FY2006 with the introduction of powder coating, adoption of low solvent paints and cleaning agents not containing VOC, and reduction of paint consumption through increase paint efficiency, among other measures. In addition, we also achieved a 44% reduction per basic unit of sales. We will continue to reduce emissions in FY2018 and later through measure such as expanding the scope of adoption of low solvent paints and cleaning agents not containing VOC, expanding the use of powder coating, and reducing paint consumption through further painting efficiency gains.

Overseas subsidiary companies also commenced the activities in FY2012.



Emissions and transfer volume of PRTR substances 28% reduction compared to FY2006 and 39% reduction per basic unit of sales

Paint solvents (toluene, xylene, and ethyl benzene) account for at least 90% of PRTR substances. In FY2018, a 28% reduction compared to FY2006 was achieved. In addition, we also achieved a 39% reduction per basic unit of sales. We will work to reduce 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 volume of Class I Designated Chemicals Substances under the PRTR Law in FY2018 (Substances subject to reporting)

			Unit: kg
Substance	Substance designation	Emissi transferre	ions + d amount
INO.	Ŭ	FY2017	FY2018
53	Ethylbenzene	139,441	218,658
80	Xylene	468,451	498,744
240	Styrene	1,709	2,050
296	1,2,4-Trimethylbenzene	14,915	16,901
297	1,3,5-Trimethylbenzene	4,971	5,559
300	Toluene	144,615	156,262
374	Hydrogen fluoride and its water-soluble salts	19,332	17,555
384	1-Bromopropane	13,036	11,122
392	n-Hexane	1,150	866
405	Boron and its compounds	1,126	1,618
412	Manganese and its compounds	12,201	12,366
420	Methyl methacrylate	1,032	1,366

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



Control of PCB and complete elimination of devices that use it

Stabilizers containing PCB are gradually being replaced or detoxified

All the devices containing high concentration PCB have been registered to the Japan Environmental Safety Corporation through early registration, and are detoxified in a planned manner based on the Act on Special Measures concerning Promotion of Proper Treatment of PCB Wastes. Transformers containing PCB and stabilizers for lighting equipment containing PCB are gradually replaced or detoxified. Moreover, we have completed surveying equipment containing low concentration PCB, and we are working to gradually detoxify them.

Environmental Impact Data

Environmental impact data for Works^{*1} of Sumitomo Heavy Industries and 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 impact data for each Works]

Tanashi Works



Chiba Works

■ Established in 1965 ■ ISO 14001 (obtained in Apr. 1999) ■ Site area: 294,600 m² ■ Building area: 110,692 m ■ Main products: Plastic processing machines, metallic molds, hydraulic excavators



Elect Gaso Kero Heav Light LNG City Wat SOX NO:

9

Energy consumption				
Electric power (1,000 kWh)	7,439			
Gasoline (kL)	0.00			
Kerosene (kL)	0.83			
Heavy fuel oil A (kL)	-			
Light oil (kL)	1.50			
LPG (t)	-			
LNG (t)	-			
City gas (1,000 m ³)	2.28			
Water consumption (m ³)	11,550			
Atmospheric discha	rge			
SOx (kg)	-			
NOx (kg)	-			

PRTR (kg/year)	Emissions	Transfer volume
Ethylbenzene	20.2	0
I,2-Epoxybutane	3.8	0
erric chloride	0	69.3
Kylene	62.1	0
Chromium and chromium (III) compounds	0	11.9
Chromium (VI) compounds including lead chromate)	0	21.6
Ethylene glycol monoethyl ether acetate	5.1	0
Foluene	485.2	0
ead	0	49.8
ead compounds	0	2.9
Nickel	0	0.2
I-Bromopropane	3,896	0
Boron and its compounds	0	6.4
Nanganese and its compounds	0	100.2

Energy consumption					
tric power (1,000 kWh)	22,160				
oline (kL)	134.83				
osene (kL)	3.26				
vy fuel oil A (kL)	-				
t oil (kL)	657.27				
(t)	8.50				
i (t)	-				
gas (1,000 m ³)	1,392.03				
ter consumption (m ³)	79,845				
Atmospheric discha	rge				
(kg)	-				
k (kg)	154				

PRTR (kg/year)	Emissions	Transfer volume
Zinc compounds (water-soluble)	251	50
Ethylbenzene	12,767	27,864
Xylene	62,293	122,019
Silver and its water-soluble compounds	10	0
Styrene	840	469
1,2,4-Trimethylbenzene	2,623	1,282
1,3,5-Trimethylbenzene	371	165
Toluene	13,341	3,300
Naphthalene	800	461
Nickel compounds	5	5
Hydrazine	1	0
Di-n-butyl phthalate	47	0
Hexamethylene diisocyanate	25	1
n-Hexane	469	276
Manganese and its compounds	7	7
Methyl methacrylate	831	488

[Environmental impact data for each Works]

Yokosuka Works

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



	Electric power (1,000 kWh)	44,298
")	Gasoline (kL)	30.92
	Kerosene (kL)	-
ess-	Heavy fuel oil A (kL)	-
ling	Light oil (kL)	218.58
	LPG (t)	11.05
	LNG (t)	-
to landfill	City gas (1,000 m ³)	1,255.04
(%)	Water consumption (m ³)	150,331
- 100	Atmospheric discha	irge
	SOx (kg)	-
	NOx (kg)	737
- 60	Discharge into the w	/ater
	COD (kg)	405.7
- 40	Nitrogen (kg)	271.0
20	Phosphorus (kg)	56.9

Energy consumption

PRTR (kg/year)	Emissions	volume
Zinc compounds (water-soluble)	264	11
Methyl acrylate	0	0
Acetonitrile	0	26
o-Anisidine	0	0
Ethylbenzene	83,792	0
Ferric chloride	8	139
Cadmium and its compounds	0	15
Xylene	127,126	0
Silver and its water-soluble compounds	0	32
Glutaraldehyde	0.17	3.68
Chromium and chromium (III) compounds	1	15
Chromium (VI) compounds (including lead chromate)	1	228
Chloroform	0	1
Cobalt and its compounds	0	0
Dichloromethane	0	1
N,N-Dicyclohexylamine	28	529
N,N-Dimethylformamide	0	1
Mercury and its compounds	0	13
Copper salts (water-soluble, except complex salts)	0	5
1,2,4-Trimethylbenzene	44	C
1,3,5-Trimethylbenzene	16	C
Toluene	30,462	117
Lead compounds	0	1
Nickel	0	4
o-Nitroanisole	0	C
Carbon disulfide	0	4
Vanadium compounds	0	3
Polycarbonate	0	0.0
Arsenic and its inorganic compounds	0	0.2
Hydroquinone	0	5
Pyridine	0	0
Phenol	444.6	0.3
Hydrogen fluoride and its water-soluble salts	15	14,930
1-Bromopropane	6,210	1,016
Hexamethylene diisocyanate	1	4
n-Hexane	1	106.0
Water-soluble salts of peroxodisulfuric acid	0	0
Benzene	0.00	0.04
Boron and its compounds	5	49
Poly (oxyethylene) nonylphenyl ether	33	630
Manganese and its compounds	1,087	10,170
Molybdenum and its compounds	0.0	1.6
Tritolyl phosphate	0	1,380
Triphenyl phosphate	4	80

Okayama Works





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



2014 2015 2016 2017 2018 (F)

2014 2015 2016 2017 2018 (FV)

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, inverters, construction cranes



aaar mata		Kerosene (kL)
gear moto	15,	Heavy fuel oil A (k
		Light oil (kL)
		LPG (t)
- Percentage of waste	to landfill	LNG (t)
I erceniuge or wusie	(%)	City gas (1,000 m
	- 100	Water consumption
		Atmosph
	-180	SOx (kg)
	- 60	NOx (kg)
		Discharge
	- 40	COD (kg)
	- 20	Nitrogen (kg)
	20	Phosphorus (kg)
	L 0	
6 701/ 2018	(FY)	

Energ Electric power (

Gasoline (kL)

y consumptio	on	PRTR (kg/year)	Emissions	Transfer
1,000 kWh)	24,072	i i i i i i i i i i i i i i i i i i i	Liniosions	volume
	37	Acrylic acid and its solutions	1	0
	0.20	Ethylbenzene	23,431	14,345
(kL)	-	Xylene	81,638	7,009
	159	Cumene	151	0
	5.1	Cobalt and its compounds	0.04	0
	0.0	Styrene	646	54
m³)	1.092.09	1,2,4-Trimethylbenzene	6,962	639
tion (m ³)	137.145	1,3,5-Trimethylbenzene	1,498	1,641
pheric discha	rge	Tolylene diisocyanate		
		Toluene	23,725	658
	1	Naphthalene	535	28
ge into the w	ater .	Nickel	1	0
0	794.0	Water-soluble salts of peroxodisulfuric acid	0.2	0
	84.2	Benzene	0.7	0
	3.6	Boron and its compounds	27.0	0
		Poly (oxyethylene) alkyl ether (alkyl C=12-15)	4	0
		Manganese and its compounds	49	11
		n-Butyl methacrylate	17	0
		Methyl methacrylate	38	0

Acrylic acid and its solutions	1	0
Ethylbenzene	23,431	14,345
Xylene	81,638	7,009
Cumene	151	0
Cobalt and its compounds	0.04	0
Styrene	646	54
1,2,4-Trimethylbenzene	6,962	639
1,3,5-Trimethylbenzene	1,498	1,641
Tolylene diisocyanate		
Toluene	23,725	658
Naphthalene	535	28
Nickel	1	0
Water-soluble salts of peroxodisulfuric acid	0.2	0
Benzene	0.7	0
Boron and its compounds	27.0	0
Poly (oxyethylene) alkyl ether (alkyl C=12–15)	4	0
Manganese and its compounds	49	11
n-Butyl methacrylate	17	0
Methyl methacrylate	38	0
α-Methylstyrene	38	0
1-Methyl-1-phenylethyl hydroperoxide	1	0
Methylenebis (4,1-phenylene) diisocyanate	0	5
Molybdenum and its compounds	0	0

Ehime Works (Saijo Factory)

■ Established in 1973 ■ ISO 14001 (obtained in Feb. 1999)

Site area: 535,000 m² Building area: 91,500 m²







Energy consumption				
Electric power (1,000 kWh)	4,710			
Gasoline (kL)	0.59			
Kerosene (kL)	-			
Heavy fuel oil A (kL)	-			
Light oil (kL)	5.35			
LPG (t)	62.87			
LNG (t)	-			
City gas (1,000 m ³)	-			
Water consumption (m ³)	10,409			
Atmospheric discharge				
SOx (kg)	-			
NOx (kg)	207			
Discharge into the water				
COD (kg)	1.5			
Nitrogen (kg)	22.8			
Phosphorus (kg)	0.2			

PRTR (kg/year)	Emissions	Transfer volume
thylbenzene	1,319	0
(ylene	2,129	0
,3,5-Trimethylbenzene	164	0
oluene	4,149	0

Energy consumption				
Electric power (1,000 kWh)	23,974			
Gasoline (kL)	10.70			
Kerosene (kL)	20.80			
Heavy fuel oil A (kL)	725.30			
Light oil (kL)	101.31			
LPG (t)	514.42			
LNG (t)	117.00			
City gas (1,000 m ³)	-			
Water consumption (m ³)	675,661			
Atmospheric discharge				
SOx (kg)	758			
NOx (kg)	1,227			
Discharge into the water				
COD (kg)	175.5			
Nitrogen (kg)	590.0			
Phosphorus (kg)	3.5			

PRTR (kg/year)	Emissions	Transfer volume
Zinc compounds (water-soluble)	0	0
Acetonitrile	0	146
Antimony and its compounds	0	0
Bisphenol A (not bisphenol A type liquid epoxy resin)	2	0
Ethylbenzene	30.815	2.579
Ferric chloride	0	0
1-Octanol	0	0
Xvlene	45,444	4.150
Cumene	4	0
Chromium and chromium (III) compounds	0	230
Chromium (VI) compounds (including lead chromate)	0	0
Cobalt and its compounds	5	2
Ethylene glycol monoethyl ether acetate	0	0
Styrene	8	0
Copper salts (water-soluble, except complex salts)	0	0
Triethylenetetramine	0	0
3,5,5-Trimethyl-1-hexanol	25	0
1,2,4-Trimethylbenzene	288	5
1,3,5-Trimethylbenzene	46	0
Toluene	40,680	4,519
Naphthalene	97	1
Nickel	0	60
Nonylphenol	147	0
Di-n-butyl phthalate	45	3
n-Butyl benzyl phthalate	4	0
Hydrogen fluoride and its water-soluble salts	0	0
Hexamethylene diisocyanate	52	0
n-Hexane	13	0
Water-soluble salts of peroxodisulfuric acid	1	0
Boron and its compounds	30	170
Manganese and its compounds	295	611
n-Butyl methacrylate	0	0
1-Methyl-1-phenylethyl hydroperoxide	0	0
Molybdenum and its compounds	0	21

Energy consumption				
tric power (1,000 kWh)	7,957			
oline (kL)	6.37			
osene (kL)	-			
vy fuel oil A (kL)	-			
t oil (kL)	48.12			
(t)	143.96			
(t)	-			
gas (1,000 m ³)	-			
er consumption (m ³)	76,678			
Atmospheric discharge				
(kg)	42			
((kg)	76			
Discharge into the w	ater			
) (kg)	288.4			
ogen (kg)	308.5			
sphorus (kg)	22.9			

PRTR (kg/year)	Emissions	Transfer volume
Ethylbenzene	2,359	3,491
Xylene	5,750	8,727
Styrene	6	5
1,2,4-Trimethylbenzene	61	31
1,3,5-Trimethylbenzene	20	66
Toluene	5,263	3,568
Naphthalene	19	11
Phenol	3	1
Hexamethylene diisocyanate	0.4	0.2

[Environmental impact 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)	3,600.5	
	Gasoline (kL)	0.1	
	Kerosene (kL)	209.4	
ndfill	Heavy fuel oil A (kL)	-	
%)	Light oil (kL)	6.0	
100	LPG (t)	5.8	
00	City gas (1,000 m ³)	0.1	
50	Water consumption (m ³)	25,946	
60	Atmospheric dischar	Atmospheric discharge	
	SOx (kg)	6	
40	NOx (kg)	465	
20	Discharge into the wa	ater	
	COD (kg)	-	
)	Nitrogen (kg)	-	
)	Phosphorus (kg)	_	

Energy consumption

Electric power (1,000 kWh) 1,490.0

Gasoline (kL)

Kerosene (kL)

Light oil (kL)

LPG (t)

SOx (kg)

NOx (kg)

Heavy fuel oil A (kL

City gas (1,000 m

Water consumpt

PRTR (kg/year)	Emissions	Transfer volume
2-Aminoethanol	6	1
Antimony and its compounds	3	0
Ethylbenzene	669	73
Xylene	2,029	219
Cumene	14	2
Chromium and chromium (III) compounds	6	1
Cobalt and its compounds	83	9
Styrene	1	0
1,2,4-Trimethylbenzene	785	87
1,3,5-Trimethylbenzene	349	39
Toluene	752	78
Naphthalene	0	0
Nickel compounds	0	0
Vanadium compounds	1	0
Di-n-butyl phthalate	0	0
n-Butyl benzyl phthalate	1	0
Hexamethylene diisocyanate	0	0
Manganese and its compounds	15	2
n-Butyl methacrylate	1	0

PRTR (kg/year)

Ethylbenzene

Chromium (VI) compounds (including lead chromate)

Cobalt and its compounds

1,2,4-Trimethylbenzene

1,3,5-Trimethylbenzene

Xvlene

Toluene

Naphthalene

1.9

26.8

9,481

Transfer volume

805 1,303

1.15

1.0

4.5

23

1,572.20

0.14

Emissions

820

1.400

1.07

4

24

2,273

0.22

Sumitomo Heavy Industries Gearbox Co., Ltd. Main products: Gear reducers



Sumitomo Heavy Industries Modern, Ltd. Main products: Plastic extrusion molding machines



Izumi Food Machinery Co., Ltd. Main products: Food processing machinery





SFK Co., Ltd Main products: Bolts, nuts, precision screws

400

200





Group companies in Japan that have independently received the 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
Sumiju Environmental Engineering Co., 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

Nihon Spindle Mfg. Co., Ltd. Main products: Industrial instruments, environmental equipment



Sumitomo Heavy Industries Ion Technology Co., Ltd. Main products: Ion implanters



Sumitomo NACCO Forklift Co., Ltd. Main products: Forklifts







PRTR (kg/year)	Emissions	Transfer volume
Zinc compounds (water-soluble)	0.00	91
Ethylbenzene	11,696	584
Ethylene glycol monomethyl ether (2-Ethoxyethanol)	134	7
Ethylenediamine	26	1
Xylene	24,764.20	1,252.74
Cumene	78	4
Ethylene glycol monoethyl ether acetate	261	13.22
Styrene	7	0
1,2,4-Trimethylbenzene	2,403	121
1,3,5-Trimethylbenzene	689	34
Toluene	7,560	382
Naphthalene	332	17
Nickel compounds	5.30	3
Di-n-butyl phthalate	1	0.03
Hexamethylene diisocyanate	15	1
Boron and its compounds	913	414
Formaldehyde	12	1
Manganese and its compounds	7.90	5
n-Butyl methacrylate	127	6
Methyl methacrylate	5	0
α-Methylstyrene	17	1

Co., Ltd.	Energy consumption	on
,	Electric power (1,000 kWh)	10,929.4
	Gasoline (kL)	-
	Kerosene (kL)	-
ntage of waste to landfill	Heavy fuel oil A (kL)	-
(%)	Light oil (kL)	-
- 100	LPG (t)	-
	City gas (1,000 m ³)	-
- 80	Water consumption (m ³)	16,835
- 60	Atmospheric discha	rge
	SOx (kg)	-
- 40	NOx (kg)	-
- 20		

-	Vanadium compounds	3	2.65
	Benzene	3.40	0.00
	Formaldehyde	0.07	0.07
-	PRTR (kg/year)	Emissions	Transfer volume
-	2-Aminoethanol	0.000	1.500
-	Antimony and its compounds	0.00	0.05
-	Ethylene glycol monomethyl ether	0.60	0.60
-	(2-Methoxyethanol)	0.00	0.00
-	Toluene	0.00	7
-	Arsenic and its inorganic compounds	0.00	1

gy consumptio	on	PRTR (k
1,000 kWh)	10,929.4	111110
	_	2-Aminoethanol
	-	Antimony and its comp
(kL)		Ethylene glycol monon (2-Methoxyethanol)
		Toluene
		Arsenic and its inorgan

PRTR (kg/year)	Emissions	Transfer volume
2-Aminoethanol	0.000	1.500
Antimony and its compounds	0.00	0.05
Ethylene glycol monomethyl ether (2-Methoxyethanol)	0.60	0.60
Toluene	0.00	7
Arsenic and its inorganic compounds	0.00	1
Hydrogen fluoride and its water-soluble salts	0.00	8
Boron and its compounds	0.00	3.70
Molybdenum and its compounds	0.00	0.78

Energy consumption		
Electric power (1,000 kWh) 4,856		
Gasoline (kL)	0.5	
Kerosene (kL)	0.6	
Heavy fuel oil A (kL)	-	
Light oil (kL)	1.5	
LPG (t)	9.1	
City gas (1,000 m ³)	126.8	
Water consumption (m ³)	12,888	
Atmospheric discharge		
Sox(kg)	-	
Nox(kg)	35	

PRTR (kg/year)	Emissions	Transfer volume
thylbenzene	70	140
thylene glycol monomethyl ether 2-Ethoxyethanol)	11	21
ylene	136	273
tyrene	1	3
,3,5-Trimethylbenzene	7	16
oluene	2,749	5,507
ead	27	52
lexamethylene diisocyanate	1	5
Nethyl methacrylate	1	3

Energy consumption		
Electric power (1,000 kWh)	1,197.4	
Gasoline (kL)	-	
Kerosene (kL)	-	
Heavy fuel oil A (kL)	-	
Light oil (kL)	16.4	
LPG (t)	0.6	
City gas (1,000 m ³)	-	
Water consumption (m ³)	2,912	
Atmospheric discha	rge	
Sox(kg)	-	
Nox (kg)	-	

PRTR (kg/year)	Emissions	Transfer volume
thylbenzene	837	0
ylene	943	0
ùmene	0	0
,2,4-Trimethylbenzene	36	0
,3,5-Trimethylbenzene	18	0
oluene	5,115	0
Di-n-butyl phthalate	40	0

Energy consumption		
467.2		
-		
-		
0.2		
-		
-		
-		
2,259		
rge		
-		
-		

PRTR (kg/year)	Emissions	Transfer volume
lydrogen fluoride and its water-soluble salts	4	0.16

Energy consumption		
tric power (1,000 kWh)	920.5	
oline (kL)	0.6	
osene (kL)	8.6	
vy fuel oil A (kL)	-	
t oil (kL)	-	
(t)	-	
gas (1,000 m³)	0.3	
er consumption (m ³)	730	
Atmospheric discharge		
(kg)	-	
(kg)	-	
Discharge into the water		
) (kg)	4.2	
ogen (kg)	-	
sphorus (kg)	-	

Complete elimination of PRTR substances

[Environmental impact data for main overseas Group companies]

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



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



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



Energy consumption		Atmospheric discharge	
Paper (A4 1,000 sheets)	639	VOC emissions (t/year)	1.9
Electric power (1,000 kWh)	4,894	SOx emissions (t/year)	-
Gasoline (kL)	-	NOx emissions (t/year)	-
Heavy fuel oil (kL)	-		
Light oil (kL)	20		
LPG (t)	-		
Natural gas (1,000 m ³)	-		
Water consumption (m ³)	17,930		

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



energy consumption		Autiospheric discharge	
Paper (A4 1,000 sheets)	1,064	VOC emissions (t/year)	56.9
Electric power (1,000 kWh)	12,897	SOx emissions (t/year)	0.11
Gasoline (kL)	-	NOx emissions (t/year)	1.21
Heavy fuel oil (kL)	-		
ight oil (kL)	41		
PG (t)	36		
Natural gas (1,000 m³)	1,413		
Water consumption (m ³)	56,264		

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



Energy consumption		Atmospheric discharge	5
Paper (A4 1,000 sheets)	6,712	VOC emissions (t/year)	1.5
Electric power (1,000 kWh)	19,246	SOx emissions (t/year)	-
Gasoline (kL)	-	NOx emissions (t/year)	-
Heavy fuel oil (kL)	-		
Light oil (kL)	-		
LPG (t)	525		
Natural gas (1,000 m ³)	-		
Water consumption (m ³)	29.439		

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



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



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



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



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



Energy consumption	
er (A4 1,000 sheets)	1,371
tric power (1,000 kWh)	2,885
oline (kL)	2
vy fuel oil (kL)	3
: oil (kL)	-
(t)	1
ıral gas (1,000 m³)	-
er consumption (m ³)	8,260

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

Energy consumption	
er (A4 1,000 sheets)	1,924
tric power (1,000 kWh)	17,028
oline (kL)	-
vy fuel oil (kL)	-
t oil (kL)	-
(t)	-
ural gas (1,000 m³)	2,127
er consumption (m³)	26,041

Atmospheric discharge	
VOC emissions (t/year)	30.8
SOx emissions (t/year)	0.03
NOx emissions (t/year)	3.56

Energy consumption		
er (A4 1,000 sheets)	765	
tric power (1,000 kWh)	5,729	
oline (kL)	-	
vy fuel oil (kL)	-	
t oil (kL)	-	
(t)	9	
ural gas (1,000 m³)	159	
er consumption (m³)	3,318	

Atmospheric discharge	
VOC emissions (t/year)	1.9
SOx emissions (t/year)	-
NOx emissions (t/year)	-

Energy consumption	
er (A4 1,000 sheets)	6,083
tric power (1,000 kWh)	8,317
oline (kL)	-
vy fuel oil (kL)	-
t oil (kL)	1
(t)	220
ural gas (1,000 m³)	417
er consumption (m³)	12,522

Atmospheric discharge	
VOC emissions (t/year)	8.6
SOx emissions (t/year)	-
NOx emissions (t/year)	-

Energy consumption	
er (A4 1,000 sheets)	1,602
tric power (1,000 kWh)	8,043
oline (kL)	-
vy fuel oil (kL)	-
t oil (kL)	-
(t)	-
ural gas (1,000 m³)	851
er consumption (m³)	4,163

Atmospheric discharge	
/OC emissions (t/year)	3.4
Ox emissions (t/year)	-
IOx emissions (t/year)	1.21