

Environment Data & Environmental Accounting 2021

For the year ended December 31, 2021

Environment Data

■ Scope of Analysis

Japan	:	STAR MICRONICS CO., LTD.	(Head Office/Quality Technical Center/Kikugawa Factory/Solution Center Tokyo Sales Office/Osaka Sales Office/Nagoya Sales Office/Suwa Sales Office)
		Star Metal Company	
		Micro Sapporo Company	
Outside Japan	:	Star Micronics Manufacturing Dalian Co., Ltd.	
		Star Micronics Manufacturing (Thailand) Co., Ltd.	
		Shanghai S&E Precision CO., Ltd. (Ends in FY 2018)	
Target Period	:	FY2017 : March 1, 2017 - February 28, 2018	
		FY2018 : March 1, 2018 - December 31, 2018	
		FY2019 : January 1, 2019 - December 31, 2019	
		FY2020 : January 1, 2020 - December 31, 2020	
		FY2021 : January 1, 2021 - December 31, 2021	

■ Solar Power Facilities

	FY 2021
Output	350kW
Average Households	130Households
Power Generated	455,000kWh

※Scope of Analysis : Kikugawa Factory/Star Metal Company.

※Selling Destination : Chubu Electric Power Company, Incorporated.

■ Environmental Impact Related to Climate Change

Scope 1, 2 CO ₂ Emissions (t-CO ₂)			FY2017	FY2018	FY2019	FY2020	FY2021	
Scope1	Heavy Oil	Japan	244	119	234	201	190	
		Outside Japan	0	0	0	0	0	
	Gasoline	Japan	143	138	148	108	131	
		Outside Japan	176	163	145	84	104	
	Light Oil	Japan	0	0	0	0	0	
		Outside Japan	19	24	22	15	20	
	kerosene	Japan	2	1	1	0	0	
		Outside Japan	0	0	0	0	0	
	LPG	Japan	124	97	87	84	115	
		Outside Japan	126	175	166	83	225	
	Total	Japan	513	355	470	393	436	
		Outside Japan	321	362	333	182	349	
Scope2	Electricity	Japan	5,971	5,275	5,960	3,895	4,426	
		Outside Japan	8,507	6,989	6,788	4,417	5,816	
	Steam	Japan	0	0	0	0	0	
		Outside Japan	1,119	703	929	684	602	
		Total	Japan	5,971	5,275	5,960	3,895	4,426
			Outside Japan	9,626	7,692	7,717	5,101	6,418
Scope1 and Scope2	Japan		6,484	5,630	6,430	4,288	4,862	
	Outside Japan		9,947	8,054	8,050	5,283	6,767	
	Total		16,431	13,684	14,480	9,571	11,629	

Scope 1, 2 CO ₂ Emissions Per Unit of Sales (t-CO ₂ /million JPY)		FY2017	FY2018	FY2019	FY2020	FY2021
Scope1 and Scope2	Japan and Outside Japan	0.270	0.208	0.239	0.210	0.181

※Scope1 greenhouse gases is calculated for CO₂ only.

※Scope2 emission factor uses the Ministry of the Environment's "Electric Power Company Emission Coefficient" for each supplier in Japan and representative values for suppliers outside of Japan.

※Scope3 CO₂ emission volume calculations are currently under consideration and have not yet been implemented.

※Emission calculations for greenhouse gases other than CO₂ are currently under consideration and have not yet been implemented.

※The calculation of CO₂ Emissions Per Unit of Sales is "Scope1+Scope2 in the scope of analysis"/"Consolidated net sales".

Environment Data

■ Environmental Impact Related to Energy

Total Energy Consumption (GJ)		FY2017	FY2018	FY2019	FY2020	FY2021
Total Energy Consumption	Japan	157,545	127,785	142,090	103,789	118,469
	Outside Japan	190,126	153,436	159,504	108,001	143,703
	Total	347,671	281,221	301,594	211,790	262,172
Total Energy Consumption Per Unit of Sales (GJ/million JPY)		FY2017	FY2018	FY2019	FY2020	FY2021
Japan and Outside Japan		5.721	4.265	4.973	2.365	4.074
Electricity Consumption (MWh)		FY2017	FY2018	FY2019	FY2020	FY2021
Electricity Consumption	Japan	13,851	12,438	13,757	9,969	11,411
	Outside Japan	16,616	13,760	13,911	9,399	12,839
of which electricity purchased	Japan	13,851	12,438	13,757	9,969	11,411
	Outside Japan	16,616	13,760	13,911	9,399	12,839
of which electricity purchased from renewable energy sources	Japan	0	0	0	0	0
	Outside Japan	0	0	0	0	0
Renewable Energy Generation	Japan	0	0	0	0	0
	Outside Japan	0	0	0	0	0
Renewable Energy Ratio	Japan	0	0	0	0	0
	Outside Japan	0	0	0	0	0

※Energy conversion outside of Japan is calculated using Japan's coefficients.

Heavy Oil (kt)	FY2017	FY2018	FY2019	FY2020	FY2021
Japan	90	44	87	74	70
Outside Japan	0	0	0	0	0
Total	90	44	87	74	70

Gasoline (kt)	FY2017	FY2018	FY2019	FY2020	FY2021
Japan	24	20	23	17	18
Outside Japan	83	50	62	36	45
Total	107	70	85	53	63

Light Oil (kt)	FY2017	FY2018	FY2019	FY2020	FY2021
Japan	0	0	0	0	0
Outside Japan	7	9	9	6	8
Total	7	9	9	6	8

Kerosene (kt)	FY2017	FY2018	FY2019	FY2020	FY2021
Japan	1	0	0	0	0
Outside Japan	0	0	0	0	0
Total	1	0	0	0	0

LPG (kg)	FY2017	FY2018	FY2019	FY2020	FY2021
Japan	42,009	38,671	37,932	27,970	38,412
Outside Japan	49,660	58,286	55,403	27,608	75,089
Total	91,669	96,957	93,335	55,578	113,501

Steam (t)	FY2017	FY2018	FY2019	FY2020	FY2021
Japan	0	0	0	0	0
Outside Japan	6,971	4,382	5,788	4,260	3,749
Total	6,971	4,382	5,788	4,260	3,749

Environment Data

■ Environmental Impact Related to Waste

Total Waste, Hazardous Waste, Recycled Waste		FY2017	FY2018	FY2019	FY2020	FY2021
Total Waste (t)	Japan	531	360	304	248	320
	Outside Japan	749	598	693	324	527
	Total	1,280	958	997	572	847
of which hazardous waste(t)	Japan	87	76	59	70	74
	Outside Japan	80	95	17	46	69
	Total	167	171	76	116	143
Recycled Waste (t)	Japan	528	357	301	247	318
	Outside Japan	635	589	337	293	449
	Total	1,163	946	638	540	767
Recycling Rate (%)	Japan	99.4%	99.2%	99.1%	99.4%	99.4%
	Outside Japan	84.8%	98.5%	48.6%	90.4%	85.2%
	Total	90.8%	98.8%	64.0%	94.3%	90.6%

※Harmful waste refers to materials classified as specially-controlled industrial waste in Japan's Waste Management Act.

※Recycling volume is the total of thermal recycling and material recycling.

※In Japan, our recycling rate goal is 99.0%.

Non-recycled Waste (t)		FY2017	FY2018	FY2019	FY2020	FY2021
Land-filled	Japan	3	3	3	2	2
	Outside Japan	114	9	356	31	78
	Total	117	12	359	33	80
Incinerated without Recycling	Japan	0	0	0	0	0
	Outside Japan	-	-	-	-	-
	Total	-	-	-	-	-

※Waste incineration volumes without related recycling outside of Japan are not known.

※Items without clear data are marked with "-".

■ Environmental Impact Related to Water

Water Use (m ³)		FY2017	FY2018	FY2019	FY2020	FY2021
Groundwater (recyclable)	Japan	943	584	943	0	0
	Third-party Source (city water)	20,139	21,042	24,307	17,452	18,894
Third-party Source (industrial water)	Japan	0	0	0	0	0
Total (Japan)		21,082	21,626	25,250	17,452	18,894
Groundwater (recyclable)	Outside Japan	0	0	0	0	0
	Third-party Source (city water)	40,415	40,257	25,796	21,263	26,418
Third-party Source (industrial water)	Outside Japan	11,206	14,955	21,444	13,808	20,312
Total (Outside Japan)		51,621	55,212	47,240	35,071	46,730
Total (Japan and Outside Japan)		72,703	76,838	72,490	52,523	65,624
Water Discharge (m ³)		FY2017	FY2018	FY2019	FY2020	FY2021
Surface Water	Japan	0	0	0	0	0
	Third-party Destination	21,082	21,626	25,250	17,452	18,894
Total (Japan)		21,082	21,626	25,250	17,452	18,894
Surface Water	Outside Japan	40,415	40,257	25,796	21,263	26,418
	Third-party Destination	11,206	14,955	21,444	13,808	20,312
Total (Outside Japan)		51,621	55,212	47,240	35,071	46,730
Total (Japan and Outside Japan)		72,703	76,838	72,490	52,523	65,624

Environment Data

■ Response to the PRTR Law in Japan (FY2021)

※Only chemical substances with emissions or movements are displayed.

※Measurements taken for Japan only.

Factory		Emissions Volume (kg)				Transfer Volume (kg)	
		Discharged to the Atmosphere	Discharged to Public Water Bodies	Discharged to the Soil at the Sites	Land-filled at the Sites	Transferred to Sewers	Transferred to Off-site
Kikugawa Factory	Ethylbenzene	0	0	0	0	0	79
	Xylene	0	0	0	0	0	100
	1,2,4-Trimethylbenzene	0	0	0	0	0	7
	Toluene	0	0	0	0	0	60
	Normal hexane extracts	418	0	0	0	0	0
Star Metal Company	Butyl methacrylate	0	0	0	0	0	7
	Toluene	827	0	0	0	0	146
Micro Sapporo Company	Xylene	21	0	0	0	0	10
	Nickel compound	0	0	0	0	4	25
Total		1,266	0	0	0	4	434

Total Volume of PRTR Emission and Transfer (Kg)	FY2017	FY2018	FY2019	FY2020	FY2021
	1,055	972	1,199	999	1,704

■ Copy Paper

Copy Paper Purchased (Thousand Sheets)	FY2017	FY2018	FY2019	FY2020	FY2021
Japan	2,849	2,788	2,572	1,369	2,068
Outside Japan	3,067	1,301	3,043	2,074	3,025
Total (Japan and Outside Japan)	5,916	4,089	5,615	3,443	5,093

Environmental Accounting

Target Period	:	January 1, 2021 - December 31, 2021
Japan	:	STAR MICRONICS CO., LTD. Star Metal Company Micro Sapporo Company
Outside Japan	:	Star Micronics Manufacturing Dalian Co., Ltd. Star Micronics Manufacturing (Thailand) Co., Ltd.

■ Environmental Protection Costs

(Thousands of JPY)

Category	Initiatives	Japan		Outside Japan	
		Investment	Cost	Investment	Cost
Costs within business area	Pollution prevention cost	0	3,389	1,756	7,013
	Environmental preservation cost	0	1,136	0	673
	Resource recycling cost	0	9,418	0	4,192
Upstream/downstream cost	Green procurement difference	0	181	0	0
Management activity cost	EMS operation, education, on-site planting	0	12,103	0	5,034
Research & development cost	R&D, WEEE/RoHS measures	0	28	0	0
Social contribution cost	Donations, financial support	0	94	0	0
Environmental damage response cost	Repairs for ground/water contamination	0	0	0	0
Total		0	26,349	1,756	16,912

※Excludes depreciation expense.

■ Financial Impact Resulting from Environmental Protection Measures

(Thousands of JPY)

	Category	Japan	Outside Japan
Earnings	Gains from sales of marketable waste from business activities	10,248	3,280
Expense reductions (Year on year)	Total energy expense (electricity/heavy oil/LPG/gasoline/light oil) reductions	▲9,819	▲38,398
	Reductions in water/well water usage expense	1,274	▲1,266
	Reductions in copy paper purchase expense	▲279	▲306
	Reductions in waste disposal expense	840	▲1,381
	Others	0	0
	Total	▲7,984	▲41,351

■ Costs Related to Water-related Risks

(Thousands of JPY)

Investment in Research and Development, and Cost of Countermeasures	
Investment	0
Cost	0

■ Environment-related Accidents, Violations, Fines, etc.

Violations of Environmental Laws and Regulations and Occurrence of Accidents	
Serious violations of environment-related laws and regulations	0
Serious accidents related to the environment	0