



ENVIRONMENTAL REPORT 2018

DIGEST VERSION

For the year ended February 28, 2018



FOREWORD

Environmental Protection Activities

In order to handle the environmental problems which are growing more severe year by year, the Paris Agreement, a new framework for global warming countermeasures, came into effect two years ago. Although the world is moving toward the realization of a carbon tax society, the United States' announcement that it was leaving the agreement has called into question how much of an effect the measures will really have. However, climate change is a major problem that affects the entire world, and due to the rapid increase in ESG (environment, society, governance) investment at this time, promoting activities for resolving environmental problems has been a social obligation for global corporations, and it is also a crucial management task.

With the 70th anniversary of the company's founding, the 2020 fiscal year, as our target, we are currently promoting a medium-term management plan. In the first year, we were able to achieve a transition through a great deal of progress. We set the following medium-term vision: "as a global niche company, our goal is to enhance prosperity and well-being of all stakeholders by distributing the added-value created through efforts the aimed at combining the strengths of advanced software and precision processing technologies that help maximize customer satisfaction." In addition to putting this vision into practice, we can also contribute to solving climate problems by creating new value in line with the needs of the current era.

As we continue to focus our efforts on earning the trust and living up to the expectations of society, we hope your continuing support.



June 2018
MAMORU SATO
Representative Director,
President and CEO



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Range Covered:

Domestic Company offices (total of 4 locations), Subsidiaries (total of 2 companies)
Production Subcontracting Company (1 company), Sales agent (1 company)

Overseas Subsidiaries (3 key production sites)

Coverage centered on Company activities, with some affiliates such as subsidiaries/sales agent also included.

Period:

The year "2018" represents the period March 1, 2017 to February 28, 2018.

ENVIRONMENTAL MANAGEMENT

Progress toward ISO 14001 Certification

We have acquired ISO 14001 certification for all three of our domestic factories, all two domestic subsidiaries, one production subcontracting company, one domestic sales agent and three key production sites at our overseas subsidiaries.

In conjunction with our affiliates, we will continue activities to strengthen our overall promotion of environmental activities.

DOMESTIC

Company Factories / Offices		
Special Products	Ihara Factory / Quality Technical Center	Acquired March 2001
Precision Products	Fujimi Factory	Acquired February 2002
Machine Tools	Kikugawa Factory	Acquired March 2002
General Administration Headquarters Technical Center	Head Office	Acquired September 2001 (Self-conformance declaration: September 2010)

Subsidiaries			
Star Metal Company	Manufacturing Division	Kikugawa Factory	Acquired April 2006
	Plating Division		Acquired March 2007
Micro Sapporo Company			Acquired March 2007

Production Subcontracting Company		
Effetto	Ihara Factory	Acquired October 2006

Sales Agent	
Move Company	Acquired January 2006

OVERSEAS

Subsidiaries (Key Production Sites)	
Star Micronics Manufacturing Dalian Co., Ltd. (Dalian, China)	Acquired May 2002
Shanghai S&E Precision Co., Ltd. (Shanghai, China)	Acquired February 2003
Star Micronics Precision (Thailand) Co., Ltd. (Ayutthaya, Thailand)	Acquired February 2009

Self-Conformance Declaration

At our Head Office, we have instilled activities performed via through Environmental Management Systems and have eliminated almost all environmental load. Accordingly, we issued an ISO14001 self-conformance declaration in September 2010.

Since issuing the self-conformance declaration, we have promoted environmentally-friendly business activities based on environmental policy.

Environmental Audits

Internal Environmental Audits

Internal environmental audits are conducted regularly each year at domestic factories and affiliates to confirm that environmental management systems are adequate and effective, and that environmental management programs are appropriate and legally compliant.

We also conduct skills enhancement seminars for internal environmental auditors to improve the expertise of people conducting internal audits.

A comprehensive environmental audit report is created listing items that fall below the expected standards, and the report is submitted to management as data for use in compiling the end-of-year environmental review. Thus audits contribute to improvements in the following year.



Training for auditors

External Environmental Audits

Domestic factories and affiliates that have acquired ISO14001 certification are subject to environmental audits (environmental management system inspection) by an external inspection authority. Certification maintenance inspections take place once a year, while renewal inspections are conducted every three years.

The results of these inspections are submitted to management as data for use in compiling the end-of-year environmental review, thereby contributing to improvements in the following year.



Conducting an environmental audit

Emergency Response

Every year, Star Micronics and its domestic affiliates plan and conduct emergency-related training of relevant parties and disaster prevention drills, as well as simulation-based drills for individuals and entire facilities based on manuals, which are evaluated as part of the process. These drills anticipate every conceivable accident or emergency (earthquake, typhoon, explosion, fire, blackout, chemicals leak, and airborne hazard, etc.).



Firefighting drill

Environmental Training

We and our domestic affiliates believe that to maintain, and further improve, the level of our environmental activities, we need to change the mindset of every single employee. We therefore offer training opportunities for all employees from new hires to management. Training comprises four core categories: general, rank-based, leader-oriented, and specialist.

In 2018 (domestic), we conducted events such as an introductory environmental seminar, a seminar on the cultivation of internal auditors.

Environmental Training Structure

Training Category	Personnel Eligible	Internal / External Seminars Offered
General training	Regular employees	Introductory seminar, general seminar, waste products separation seminar
Rank-based training	Managers	Managers' seminar
	Top management	Top management seminar
Leader-oriented training	Environmental leaders	Environmental manual seminar (Including document management)
Specialist training	Environmental survey team	Environmental impact evaluation seminar
	Internal environmental auditors	Internal auditor development seminar (Internal/External) *
	Personnel in charge of environmental law	Environmental law seminar*
	Public-sector environmental experts	Qualification seminar/Test based on laws and regulations
	Personnel in charge of procurement	Green procurement seminar
	Personnel in charge of waste products	Waste products seminar
	Harmful substance handler	OJT by personnel with public-sector environmental qualifications
	Noise measurement personnel	OJT by certified internal environmental experts

*For the certified internal environmental experts

Public, Environmental Qualified Person Related to Environment

Name of Qualification	Number of Persons Qualified (Number of Persons Qualified in 2018)
Safety manager	5 (0)
Public health manager	18 (0)
Pollution prevention manager	8 (1)
Manager in charge of industrial waste requiring special management	15 (0)
Fire prevention manager	13 (0)
Promoter of energy management and planning	1 (0)
Dangerous substance handler	82 (1)
Manager in charge of handling of toxic and harmful substances	3 (0)
Manager in charge of X-ray operations	1 (0)
Manager in charge of organic solvent operations	30 (1)
Manager in charge of specific chemical substance operations	5 (0)

Status of Legal Compliance

Star Micronics and its domestic affiliates have stipulated internal regulations for the application of environment-related laws, and compliance with these laws is evaluated in accordance with a list of specific items to be monitored and measured.

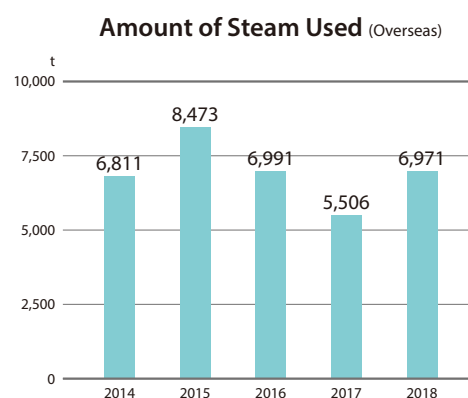
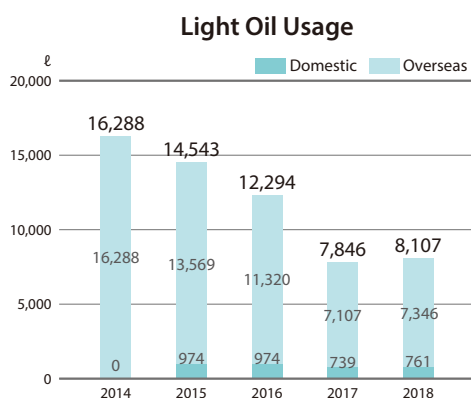
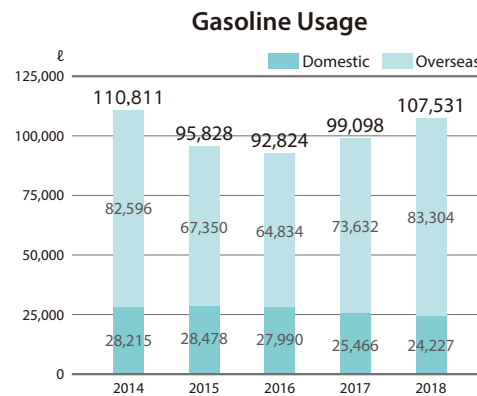
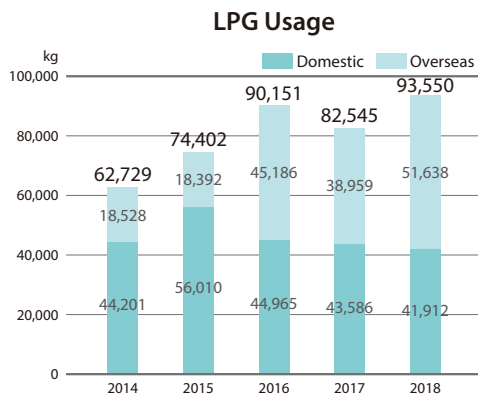
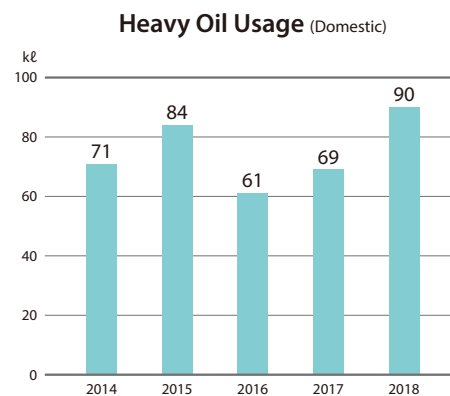
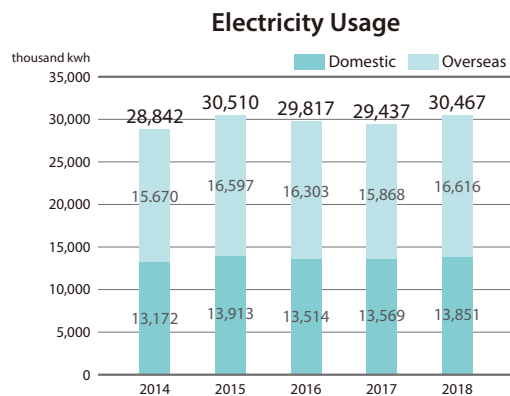
Legal compliance is confirmed by checking that results measured are in line with management figures, and the data is stored as an environmental record. When installing, introducing, changing, or disposing of facilities and equipment, we conduct an assessment of the facilities and equipment to evaluate legal compliance.

ENVIRONMENTAL LOAD ASSOCIATED WITH BUSINESS ACTIVITIES

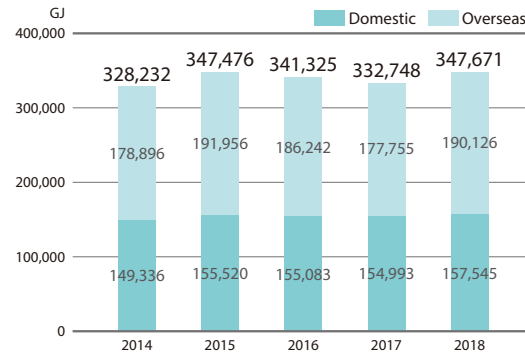
We use a variety of resources and energy during the process of conducting business activities. This results in the emission of CO₂ and the generation of waste products. We assess the environmental load associated with our activities and promotes activities to decrease environmental load by reducing the amount of energy consumed, waste products generated and decreasing the amount of hazardous materials used.

*Scope of Analysis: domestic (Star Micronics Co., Ltd. and affiliated domestic companies), overseas (Star Micronics Manufacturing Dalian Co., Ltd.; Shanghai S&E Precision Co., Ltd.; Star Micronics Precision (Thailand) Co., Ltd.; Star Micronics Manufacturing (Thailand) Co., Ltd.: from 2014)

Change in Input Amount (Major Items)

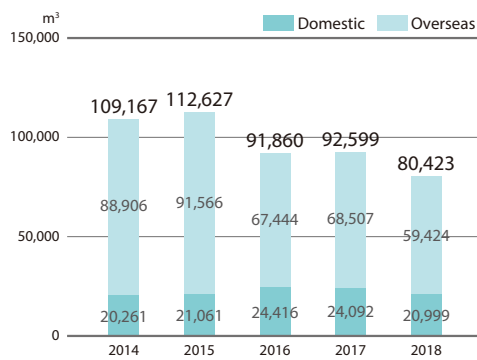


Total Amount of Energy Used

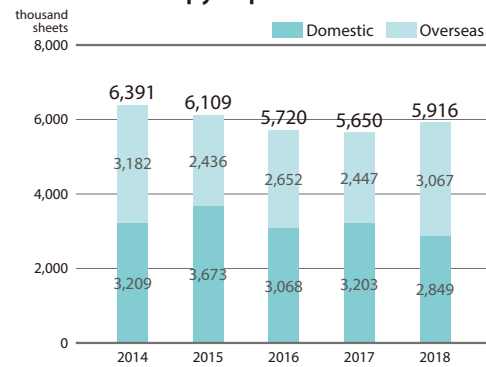


Note: Domestic conversion factors are used when calculating overseas energy.

Water Usage

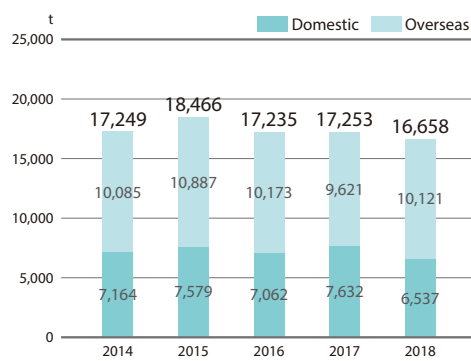


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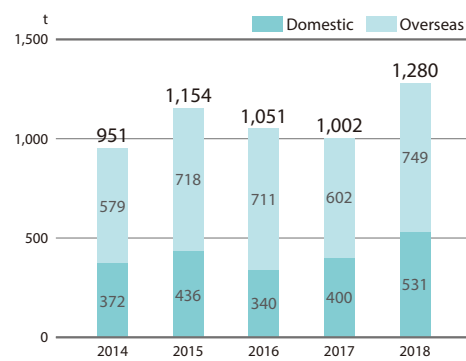


Change in Discharge Amount (Major Items)

CO₂ Emissions



Waste Generated



ENVIRONMENTAL ACCOUNTING

Environmental Protection Costs

(thousands of yen)

Category		Initiatives	Domestic		Overseas	
			Investment	Expenses	Investment	Expenses
Costs within Business Area	Pollution Prevention Cost	Prevention of air/water/ground contamination	0	14,473	0	5,656
	Environmental Preservation Cost	Energy conservation	9,451	2,390	0	792
	Resource Recycling Cost	Treatment/disposal of waste	0	10,027	0	3,524
Upstream/Downstream Cost		Green procurement difference	0	0	0	0
Management Activity Cost		EMS operation, Education, On-site planting	8,181	27,980	0	2,596
Research & Development Cost		R&D, WEEE/RoHS measures	0	6,077	0	0
Social Contribution Cost		Donations, Financial support	0	195	0	0
Environmental Damage Response Cost		Repairs for ground/water contamination	0	167	0	0
Total			17,632	61,309	0	12,568

Note: Excludes depreciation expense.

Financial Impact Resulting from Environmental Protection Measures

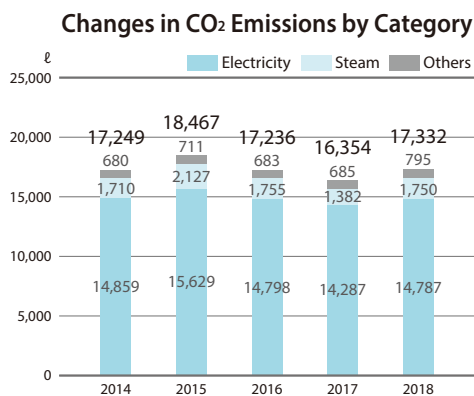
(thousands of yen)

Category		Domestic	Overseas
Earnings	Gains from sales of marketable waste from business activities	4,704	3,072
Expense Reductions (Year on Year)	Total energy expense (electricity/heavy oil/LPG/gasoline/light oil) reductions	-11,712	4,122
	Reductions in water/well water usage expense	-222	580
	Reductions in copy paper purchase expense	-41	-148
	Reductions in waste disposal expense	-123	-1,215
	Others	0	0
Total		-7,394	6,411

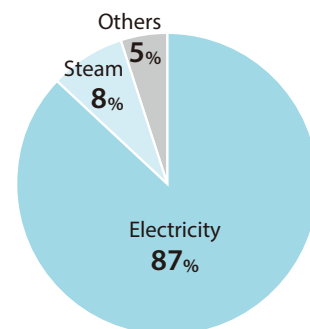
ENERGY SAVING ACTIONS -TO PREVENT GLOBAL WARMING-

We are taking a variety of actions to reduce the amount of energy consumed and is working to reduce CO₂ emissions amount.

Changes in CO₂ Emissions Amount



Breakdown of CO₂ Emissions by Category
(2018, domestic and overseas factories)



Less Air Conditioning

We lengthened our Cool Biz Campaign in accordance with lengthening of the period at the Ministry of the Environment.

Cool Biz Campaign

1. Period Conducted: May 8 to the end of October
2. Air conditioning temperature: Set to 28°C
(Although the campaign does not apply to manufacturing and reception areas, these are included as much as possible.)
3. Attire: No neckties or uniforms are worn

Warm Biz Campaign

1. Period Conducted: December 1 to the end of March
2. Heating temperature: Set to 22°C
3. Attire: Employees are encouraged to wear warm clothes

Information is posted at the entrances to each office and visitors are urged to cooperate.



Installation of solar power facilities

As part of environmental conservation actions, we installed solar power facilities on roofs of Kikugawa Factory and the factory at Star Metal Company. The two facilities provide a total output of 350 kilowatts. It has power generated 470 thousand kilowatt-hours in 2018. An amount equivalent to the power consumed by about 130 average households. All of the generated electricity is sold to Chubu Electric Power Co., Inc.



Solar Power Facility of Kikugawa Factory (Red flame)



Solar Power Facility of Star Metal Company (Red flame)

Heat shielding using roof shades

We have installed roof shades on Kikugawa South Factory and Ihara Factory. These roof shades alleviate the drastic temperature increases associated with summer and reduce the amount of energy used for air conditioning. As a result, Ihara Factory has reduced energy consumption in summer by 28%.



Roof shades (Kikugawa South Factory)



Roof shades (Ihara Factory)

Efficient and power-saving outside light

We replaced mercury-vapor lamps in Micro Sapporo Company with metal halide lamps which feature high-brightness, power-saving and a long lifespan. Replacement with these new lamps realized a reduction in energy consumption of approximately 50%. Also, at our Head Office we installed LED lighting which consumes one-tenth of the power of conventional mercury-vapor lamps.



Metal halide lamp (Micro Sapporo Company)



LED light (Head Office)

The number of company cars owned

In order to reduce the amount of CO₂ emissions by company cars, we have implemented the use of lightweight cars and hybrid cars.

(Number)				
Year \ Type of Car	Ordinary Cars	Mini Cars	Hybrid Cars	Total
2015	30	10	9	49
2016	30	10	9	49
2017	29	10	9	48
2018	25	8	9	42

* The above number as of the end of February

No-Car Campaign

Every year, we hold a No-Car campaign for employees who commute by car or motorcycle to offices within Shizuoka City. We implemented a 2-week No-Car campaign in both spring and autumn of this year.

Implementation Report

Enforcement period	May 15 - 26, October 16 - 27, 2017
Participants	73 Individuals
Eco-commute distance	2,617Km
CO ₂ reduced	608Kg (Calculated based on fuel consumption of 10 km/ℓ)



Lights-Down Campaign

This year, we once again participated in the Lights-Down Campaign held by the Ministry of the Environment. The rooftop neon logo signs at our Head Office, Ihara Factory and Fujimi Factory were turned off at 8:00 PM for 4 days from July 6th (Thursday) to July 9th (Sunday) of 2017. As a result, the amount of power used during this period decreased by 556 Kilo-watt hours.

Response to the Revised Energy Conservation Act

As a business which is subject to the revised Energy Conservation Act, we must reduce our energy consumption rate every year in the mid- to long-term. In response to this law, we have appointed an Energy Management Supervisor and an Energy Management Planner who fulfill a central role in energy conservation activities. We have also established an Energy Conservation Task Force and formulated Compliance Rules for Promoting Energy Conservation to serve as guidelines. Through such measures, we are actively working to conserve energy.

ENVIRONMENTALLY FRIENDLY MANUFACTURING

Special Products

Complying with the most recent 2.0 version of the International ENERGY STAR® Program, which is a global system of energy conservation, we released our lineup of printers boasting low power consumption, products aiming to reduce the environmental burden. Another eco-friendly initiative is our electronic receipt service "AllReceipts" offering Cloud storage and management for digitized receipt data.

We also use pulp mold created by recycling newspapers, carton, and other types of used paper for packaging, while our printers are equipped with back-feeding function to reduce blank space and reduced print function that helps to cut down on the paper used to print receipts.



Machine Tools

With machining of the large-diameter parts used in fields such as automobiles, hydraulics, and pneumatics as the main production targets, we developed the "SR-32J II", a machine capable of machining diameters up to 32 mm. In order to handle the component machining needs of the continually diversifying marketplace, we have transitioned from guide bush technology to non-guide bush technology. As a result of this change, we can now machine components with the optimal specifications for their overall length, reducing the length of waste materials.

We have also increased the motor output and machine durability compared to previous equipment, which has in turn improved cutting conditions, reduced cutting time, and enabled us to minimize the amount of time cutting machinery is not in operation. As a result, we have achieved a reduced overall cycle time.



LOWERING ENVIRONMENTAL CONTAMINATION RISK

Managing Chemical Substances

Star Micronics and its domestic affiliates have created and implemented internal regulations for the management of harmful substances and dangerous materials handled by the Company in order to ensure proper and safe management of chemical substances. These internal regulations, based on the relevant laws and statutory regulations, are designed to ensure that the environment is taken into account in the purchasing, storage, use and disposal of such substances.

Response to PRTR* Law

In accordance with the PRTR (Pollutant Release and Transfer Register) Law, we have continued to submit notification regarding the emission and transfer volume for Class I Designated Chemical Substances. The annual handling volume of such substances has decreased greatly due to the use of powder paints which do not contain organic solvents (including substance subject to PRTR) and to a change to alternative materials. As a result, since 2011 there are no longer any offices or affiliated companies for which submission is required.

However, from the perspective of appropriate handling of chemical substances, we will continue to gather data on emission and transfer volume.

The emission/transfer amount of substances in 2018 was as follows:

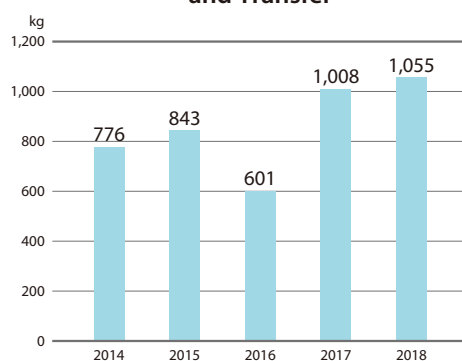
*The PRTR (Pollutant Release and Transfer Register) Law is a means of obtaining, collating and disclosing emission and transfer volume data for harmful chemical substances.

PRTR Reports for all Domestic Factories and Affiliates

(kg/year)

Factory	Substance No.	Chemical Substance Name	Use	Emissions Volume			Transfer Volume			Total
				Air	Public Drainage Areas	Ground within Factory	Landfill within Factory	Washed into Sewage	Waste within Factory	
Micro Sapporo Company	309	Nickel Compound	Chroming	0	0	0	0	2	46	48
Star Metal Company	300	Toluene	Coating	831	0	0	0	0	111	942
	80	Xylene	Coating	35	0	0	0	0	8	43
Fujimi Factory	374	Hydrogen fluoride and water-soluble salt	Polishing	0	0	0	0	0	2	2
	392	Normal hexane extracts	Parts Cleaning	20	0	0	0	0	0	20
Total				886	0	0	0	2	167	1,055

Total Volume of PRTR Emission and Transfer



Measures for reducing the risk of environmental pollution

At Star Metal, our paint pre-treatment line stopped using nickel nitrate, one of the compounds regulated by the provisions of the Water Pollution Prevention Act, in December 2017, reducing the risk of environmental destruction from factory waste water.

In addition, we were able to simplify our structure after eliminating the use of this controlled substance, as we were no longer running a specified facility using a hazardous substance.

Response to Air Pollution

Furthermore, in order to maintain and monitor the standard values above, Star Metal is implementing weekly voluntary inspections using a simplified measuring method in the Machine Tools Division. Use of the powder coating method allows us to reduce environmental load at the manufacturing stage.

This new method has realized the environmental effect of cutting atmospheric pollutants (VOC) drastically and reducing industrial waste by one-third.



Powder coating



Response to EU Environmental Regulations

Environmental regulations in the European Union (EU) have had a significant impact not only within the EU region but also in various countries around the world, and many Japanese manufacturing industries have been forced to respond in some way.

For our products that fall under WEEE and RoHS directives, we are operating based on our internal regulations for management of substances that burden the environment and on green purchasing guidelines.

Also, for REACH Regulations, we are implementing sequential surveys in regards to whether our products include any SVHC, which are added every year.

Use of X-ray Fluorescence Spectrometers

We use X-ray fluorescence spectrometers to measure levels of chemical substances contained in components of our printers that fall under the WEEE and RoHS directives, as well as to conduct inspections on receipt of the components.

Our machine tools do not fall under these directives, but we have taken aggressive measures such as using X-ray fluorescence spectrometers to measure the composition of components with a view to reducing harmful substances. Components used in the actual machines in our key products are 99% RoHS compliant, excluding certain NC control equipment.

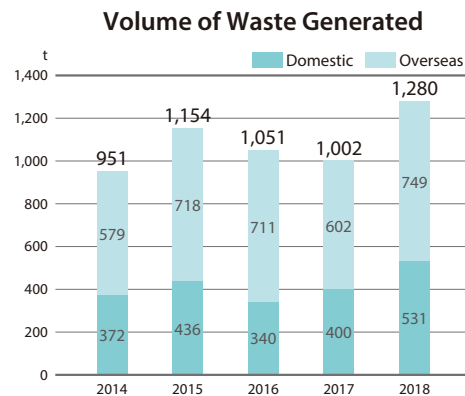


X-ray fluorescence spectrometer

PROMOTION OF REDUCTION AND RECYCLING ACTIVITY OF WASTE

We and our domestic affiliates have created and implemented internal waste management regulations in order to properly dispose of waste produced from corporate activities in line with the requirements of the Waste Disposal Law and to promote voluntary activities.

Waste products generated in 2018 increased by 278 tons compared to the previous fiscal year. The recycling rate was 99.4%. We will continue to instruct group employees regarding the dismantling and separation of trash in order to improve our recycling rate.



SOCIAL CONTRIBUTION ACTIVITIES RELATED TO THE ENVIRONMENT

Social Contribution Activities

Inviting participation of the employees and their families, we participate in voluntary cleanup campaigns organized by the municipal authorities of Shizuoka every year.

We organized cleanup campaigns in June and September. CSR activities at Star Micronics entail an active role in contributing to society with the cooperation of our employees.

Participation in voluntary cleanup campaigns in Shizuoka city

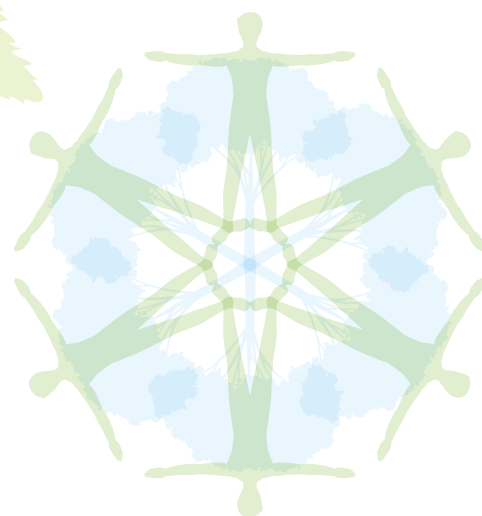
Date	Place	Participants
June 3th (Saturday), 2017	Miho-Masaki Beach	23
September 2th (Saturday), 2017	Okitsu River	17



China: voluntary activity in Dalian

In Star Micronics Manufacturing Dalian Co., Ltd., one of the main production bases of the Company overseas located in Dalian, China, we are annually organizing voluntary activities, in which employees give their support to the community. We participated in tree planting and cleanup activities.

Date	Place	Participants
June 3th (Saturday), 2017	Area around the Dahei Mountain cleanup activities	112
September 23th (Saturday), 2017	Area around the Tong Niu Ling cleanup activities	106



Publication of the Environmental Report

From the perspective of conserving the environment through such measures as reducing energy usage and saving resources, we don't publish its Environmental Report in paper form. Instead, the report is published on the Star Micronics website as a PDF-format file.

Environmental activities of Star Micronics

<https://www.star-m.jp/eng/company/co05.html>

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