

ENVIRONMENTAL REPORT 2016 DIGEST VERSION

For the year ended February 29, 2016

STAR MICRONICS CO., LTD.



FOREWORD

Environmental Protection Activities

In recent years, there are numerous cases throughout the world of abnormal weather, natural disasters, and eco system destruction which are thought to be caused by global warming. These issues are having a negative effect on our planet and human society.

COP21 (21st Conference of Parties to the United Nations Framework Convention on Climate Change) was held in France in December 2015. At the conference, the Paris Agreement was adopted as an international framework for dealing with global warming from 2020. The agreement aims to keep the average global temperature rise below 2 degrees Celsius, and to reduce emissions of greenhouse gases throughout the entire world to zero by the second half of this century.

In this way, the world has taken an important first step towards solving the issue of global warming and a sense of urgency towards the environment is heightening. Corporations must also taken action based on a long-term perspective.

By utilizing the core technologies of compact precision processing and assembly which we have gained throughout our history, our Company is engaging in environmentally-friendly manufacturing which efficiently utilizes resources. Furthermore, our entire Group is joining together to implement continuous environmental management activities and contribute to the construction of a sustainable society.

Moving forward, we shall strive to exist as a corporation which responds to the trust and expectations of society. We look forward to your continued understanding and support.



HAJIME SATO President and CEO

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

Overseas/ Subsidiaries (3 key production sites)

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

• The year "2016" represents the period March 1, 2015 to February 29,2016.



......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 agents 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	Acquired March 2001
Precision Products	Fujimi Factory	Acquired February 2002
Machine Tools	Kikugawa Factory	Acquired March 2002
Conoral Administration Hoadquarters	Head Office /	Acquired September 2001
P & D Contor	Quality Technical Conter	(Self-conformance declaration:
k & D Center		September 2010)

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

Production Subcontracting Company		
BLUEL Co., Ltd.	Ihara Factory	Acquired October 2006

Sales Agents	
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 and Quality Technical Center, 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

Environmental Training

Star Micronics and its 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 2016 (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		
Pank bacad training	Managers	Managers' seminar		
Rank-Dased training	Top management	Top management seminar		
Leader-oriented training	Environmental leaders	Environmental manual seminar (Including document management)		
	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*		
Specialist training		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 2016)	Name of Qualification	Number of Persons Qualified (Number of Persons Qualified in 2016)
Safety manager	5 (0)	Dangerous substance handler	88 (4)
Public health manager	16 (0)	Manager in charge of handling of toxic and 3 (0) harmful substances	
Pollution prevention manager	7 (0)	Manager in charge of X-ray operations	1 (0)
Manager in charge of industrial waste requiring special management	16 (0)	Manager in charge of organic solvent operations	35 (0)
Fire prevention manager	13 (0)	Manager in charge of specific chemical substance operations	7 (0)
Promoter of energy management and planning	2 (0)		

Note: For the parent company only. Excludes domestic affiliates.



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.).



Oil leakage response drill



Firefighting drill



Firefighting drill



Evacuation drill

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

Our company uses 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. Our company assesses the environmental load associated with our activities and promotes activities to decrease environmental load by reducing the amount of energy consumed, reducing the amount of 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. (SMPT); Star Micronics Manufacturing (Thailand) Co., Ltd. (SMMT) :from 2014)

Change in Input Amount (Major Items)











Amount of Steam Used]





Although energy usage is increasing due to increased production, we have improved our energy consumption per unit, which is an index of energy usage efficiency.

*Energy consumption per unit: Calculated by dividing the amount of energy used by a value that is closely related to energy usage.



[Copy Paper Purchased]



Change in Discharge Amount (Major Items)







Environmental Protection Costs] (thousands of yen)							
Cotonom				Domestic		Overseas	
	Category	Initiatives		Expenses	Investment	Expenses	
Costs within	Pollution Prevention Cost	Prevention of air/water/ground contamination	1,196	9,616	0	6,086	
	Environmental Preservation Cost	Energy conservation	7,306	1,398	0	478	
DUSITIESS Area	Resource Recycling Cost	Treatment/disposal of waste	395	8,524	0	1,921	
Upstream/Downstream Cost		Green procurement difference	0	149	0	0	
Management A	ctivity Cost	EMS operation, education, on-site planting	0	26,945	0	2,662	
Research & Dev	velopment Cost	R&D, WEEE/RoHS measures	0	2,953	0	0	
Social Contribu	tion Cost	Donations, financial support	0	445	0	0	
Environmental Damage Response Cost		Repairs for ground/water contamination	0	0	0	0	
	Total			50,030	0	11,147	

Note: Excludes depreciation expense.

[Financial Impact Resulting from Environmental Protection Measures]

(thousands of yen)

	Category			
Earnings	Gains from sales of marketable waste from business activities	40,990	1,666	
	Total energy expense (electricity/heavy oil/LPG/gasoline/light oil) reductions	24,130	-20,881	
Expense Reductions	Reductions in water/well water usage expense	-1,252	2,144	
(Year on Year)	Reductions in copy paper purchase expense	386	-133	
	Reductions in waste disposal expense	315	2,451	
Others		0	0	
	Total	64,569	-14,753	

Note: In the expense reduction figures, a minus indicates that a reduction was not achieved and the expenses increased.





..... ENERGY SAVING ACTIONS ~TO PREVENT GLOBAL WARMING~

Our company is taking a variety of actions to reduce the amount of energy consumed and is working to reduce CO_2 emissions amount.

[Changes in CO₂ Emissions Amount]





[Less Air Conditioning]

In 2016, we lengthened our company's Cool Biz Campaign in accordance with lengthening of the period at the Ministry of the Environment.

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- 1. Period Conducted: May 7 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

Narm 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.



Cool Biz information board



Warm Biz information board

[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 450 thousand kilowatt-hours in the fiscal year 2016. an amount equivalent to the power consumed by about 125 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 Facilityof Star Metal Campany (Red flame)

[Heat shielding using roof shades]

We have installed roof shades on our 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 CO_2 emissions by company cars, our company has implemented the use of lightweight cars and hybrid cars.

					(Number)
Type of Car Year	Ordinary Cars (Leased)	Ordinary Cars (Purchased)	Mini Cars (Leased)	Hybrid Cars (Leased)	Total
2014	30	1	10	9	50
2015	30	0	10	9	49
2016	30	0	10	9	49

[No-Car Campaign]

Every year, our company holds 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 : Monday, May 18 - Friday, May 29, 2015 Monday, October 19 - Friday, October 30,2015
	Participants : 75 individuals
スター積密株式会社	Eco-commute distance : 2,848Km
	CO2 reduced: 771Kg
間	(calculated based on fuel consumption of 10 km/ $$ $\!$

[Lights-Down Campaign]

This year, our company 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 the 2 days from July 6th (Monday) to July 7th (Tuesday) of 2015. As a result, the amount of power used during the 2 day period decreased by 558 Kilo-watt hours.

[Vibration power generators (conservation of energy/resources)]

Our Company is developing a vibration power generator which utilizes energy harvesting technology. This technology is attracting increased attention in recent years.

Conventional technology did not use the vibration from machines, structures or the human body (in walking and running) as energy. However, the vibration power generator developed by our Company is capable of converting such vibration into energy. This enables efficient power usage for energy which was previously thrown away.

In the future, in addition to seeking further improvement in generation capability, we will promote the manufacturing of products which combine our Company's vibration power generator with various sensors

and wireless communication sensors. This will enable monitoring of power sources in various fields including structures, moving bodies and machines. Our Company also seeks to contribute to conservation of resources by providing wireless and battery-less technology to the field of wireless sensor networks, an area for which significant future growth is expected.



Vibration power generator: EH12

...... Response to the Revised Energy Conservation Act

[Energy conservation activities by the Energy Conservation Panel]

As a business which is subject to the revised Energy Conservation Act, our company must reduce our energy consumption rate every year in the mid- to long-term. In response to this law, our company has 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.



...... 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 handing 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 2016 was as follows:

[PRTR Reports for all Domestic Factories and Affiliates] (Unit: kg/year)										
	Substance No.	Chemical Substance Name	Use	Emmissions Volume			Transfer Volume			
Factory				Air	Public Drainage Areas	Ground within Factory	Landfill within Factory	Washed into Sewage	Waste within Factory	Total
Micro Sapporo Company	309	Nickel Compound	Chroming	0	0	0	0	1	36	37
Star Metal Company	227	Toluene	Coating	167	0	0	0	0	383	550
	63	Xylene	Coating	-21	0	0	0	0	31	10
Fujimi Factory	374	Hydrogen fluoride and water-soluble salt	Polishing	0	0	0	0	0	4	4
Total			146	0	0	0	1	454	601	

*The PRTR (Pollutant Release and Transfer Register) Law is a means of obtaining,

[PRTR Reports for all Domestic Factories and Affiliates]

collating and disclosing emission and transfer volume data for harmful chemical substances.



Measurement result at the time of the on-the-spot inspection conducted in December, 2015

[Star Metal Company]

		(Unit: mg/ℓ)
Chemical substance name	Standard value	Measured value
Zinc	5	Less than 0.1
Fluoride and its compounds	8	Less than 0.1
Ammonia and its compounds	100	Less than 0.7

Furthermore, in order to maintain and monitor the standard values above, STAR MICRONICS is implementing weekly voluntary inspections using a simplified measuring method in the Machine Tools Division. Use of the powder coating method allows our company 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

Star Micronics and its 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.

Volume of Waste Generated and Recycling Rate



Waste products generated in 2016 decreased by 103 tons compared to the previous fiscal year. The recycling rate was 99.2%. Our company shall 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

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]

Inviting participation of the employees and their families, Star Micronics participates in voluntary cleanup campaigns organized by the municipal authorities of Shizuoka every year. In 2015, we organized cleanup campaigns in June and September.

Time	Place	Participants
June 6th(Saturday)	Miho-Masaki Beach	11
September 5th(Saturday)	Okitsu River	21





Our participant

[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.

In 2015, we participated in tree planting and cleanup activities.

Date	Place	Participants
April 18th(Saturday)	Dalian organized tree-planting activities	140
July 4th(Saturday)	Area around factory and Dahei Mountain cleanup activities	146
August 29th(Saturday)	Golden Pebble Beach cleanup activities	147



Tree-planting activities

Cleanup activities of the area around factory(left) and beach(right)

Publication of the Environmental Report

From the perspective of conserving the environment through such measures as reducing energy usage and saving resources, Star Micronics does not 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 · · · http://www.star-m.jp/eng/company/co05.html

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