

Environmental and Social Report 2019



Message from the President

Working toward the Achievement of a Sustainable Society, We Use Photonics Technology to Help Solve Environmental and Social Problems



Introduction

In November 2018, Hamamatsu Photonics K.K. (HPK) hosted Photon Fair 2018, a general trade exhibition. The theme of the exhibition was “Journey to the future of Photonics with Hamamatsu.” I would like to sincerely thank everyone who made this event a tremendous success garnering our highest-ever turnout of over 10,000 attendees. In each exhibiting field—ENVIRONMENT, AUTOMOTIVE, LIFE, MEDICAL & LIFE SCIENCE, MANUFACTURING, SCIENCE & RESEARCH—Photon Fair 2018 showcased the latest technologies and products, highlighting HPK’s technological capability and vision as well as the boundless potential of photonics technology. Leveraging the mutual understanding we gained through dialogue with our customers, we at HPK will move forward with new co-creative initiatives, contributing to the world through wider application of photonics.

As always, environmental issues top our list of concerns at HPK. In December 2018, the 24th Conference of the Parties (COP24) to the United Nations Framework Convention on Climate Change (UNFCCC) convened in Katowice, Poland. The representatives of nearly 200 countries agreed on a policy for implementation of the Paris Agreement from 2020 and began efforts in each country to implement measures against global warming. Japan is expected to play a leading role in the international decarbonization movement, through operation of Ibuki 2, a satellite that measures greenhouse gases; a four-year project to reduce greenhouse-gas emissions; and publication of reports on the steady implementation of international agreements. In business sectors, two targets attracting attention are the Science Based Targets (SBTs), which call on private enterprises to set a target of aligning with a 2°C global temperature increase trajectory; and RE100, the target of achieving 100% reliance on renewable energy.

Based on the United Nations’ (UN’s) Sustainable Development Goals (SDGs), efforts are accelerating to achieve targets in 17 fields simultaneously, encompassing environmental, social and economic issues. Measures by companies to tackle issues in recognition of the attendant risks and opportunities are referenced in the UN proposal of Principles for Responsible Investment (PRI) and a proposal of the Task Force on Climate-related Financial Disclosures (TCFD). Institutional investors and financial institutions that invest in the environment, society and governance (ESG) are also showing considerable interest in these measures, which have a direct effect on corporate fundraising.

At the same time, as companies conduct business and manufacture products, they are increasingly pressed to build social and environmental responsibility into the entire value chain. This concern informs product and environmental regulations such as the EU RoHS Directive and REACH Regulation. It also drives efforts to grapple with the “conflict minerals” problem, in which the sale of valuable minerals funds armed insurgents in unstable regions.

HPK recognizes the importance of responding to these concerns with abundant disclosure. HPK discloses its materiality and related risks and opportunities with regard to its manufacturing and business activities. We position the environment as a key issue to address in our management strategy. Moreover, HPK grapples with social and economic issues and discloses these efforts and their results in an appropriate and timely manner.

Summary for Fiscal Year 2018

HPK is committed to being a good corporate citizen. Based on the Basic Policy on Corporate Governance, which defines its management philosophy, HPK has established its Basic Approach to Corporate Ethics and Compliance and Fundamental CSR Policy. HPK deploys a number of policies focused on improving its business practices. Some examples are, the Basic Policy on BCP, Corporate Health Policy, Fundamental Environmental Policy, Quality Policy and Occupational Health and Safety Policy.

Mindful of international trends exemplified by the SDGs and the Paris Agreement, in fiscal year 2018, HPK intensified its activities in search of solutions for environmental and social problems. In activities to restrain global warming, HPK was recognized for a new building in Shizuoka Prefecture, for which it received that prefecture’s 2017 Environment-friendly Building Award. HPK also drafted a target for renewable-energy use by 2030 and began working toward that goal. As for activities for biodiversity conservation, we planted trees and donated Happy Memorial Trees to employees. In product-related efforts, HPK worked with its business partners to implement chemSHERPA, a scheme to provide information about chemicals included in products, accelerating its response to product environmental regulations. Finally, in consideration of ESG evaluations, HPK took several steps to broaden public dissemination of environmental information: It made necessary preparations in its corporate organization as well as reporting to the Carbon Disclosure Project (CDP); continued participation in projects to build a platform for environmental disclosure; and promoted disclosure to and dialogue with stakeholders.

As ever, HPK was active in tackling social issues as well. On the basis of its expression of support for the 10 principles enshrined in the UN Global Compact, HPK was certified as one of the “White 500”: an “Outstanding Enterprise in Health and Productivity Management in 2018 (large enterprises category).” This recognition is well-deserved, as HPK is working hard to enable all employees to live long and fulfilling lives with a healthy balance of work and family life. To prepare for earthquakes and other disasters, HPK revised its Continuity of Business Plan and related training procedures and strengthened its risk-management system for employees on overseas business trips.

Using Photonics Technology to Help Solve Environmental and Social Problems

The scope of application of photonics technologies is expanding year by year. As medical devices grow more advanced, and semiconductor and electronic parts become finer and more compact, HPK is seeing the demand base for its products continually widen. Photonics has emerged as a “key enabling technology”: a vital technology that holds the key to leading-edge technologies in a wide range of fields.

At HPK, our foundational principle is that we aim to use photonics technology to create new industries and achieve the world’s best manufacturing. We are investing proactively in research and development to expand our operations, while leveraging unique photonics technologies to develop products that can contribute to society and the environment. In fiscal year 2018, HPK moved forward with development of compact, lightweight, and environmentally friendly products, including low-power consumption products. We also devised ways of reducing the use of materials in the manufacturing process and extending the working life of our products, thereby contributing to the reduction of product waste.

Guided by the Photonics Declaration in Hamamatsu, HPK is developing photonics that contribute to society while widening the scope of its application. We are introducing Biophotonics-design which provides solutions by adapting our technologies to the needs of the medical workplace. We also established the innovative Photonics Evolution Research Center as part of a framework for an industrial-academic partnership, aiming for creating revolutionary innovation in Hamamatsu as a “Preeminent Photonics City.”

Our mission of contributing solutions for society and the environment continues. Through photonics, we will continue to work hard to lessen the environmental impact of our business activities while providing products that are friendly to the environment and assist in its preservation. In so doing, we are contributing to environmental and social solutions and the achievement of the SDGs.

On behalf of all of us at HPK, I humbly ask for the continued support and guidance of stakeholders.

Akira Hiruma
President and CEO
Hamamatsu Photonics K.K.

Plastic sorting
InGaAs area image sensor, MEMS-FPI, Dual energy X-ray line scan cameras, Wavelength-sweeping pulsed quantum cascade laser

Gas Spectrometry and Measurement
InAsSb photodiode, Quantum cascade laser, Mid-infrared LED, Xenon flash lamp module, Quantum cascade spectroscopic module, Scintillation probe

Mass Spectrometry
MCP assembly, Electron multiplier, Photoionization source, DIUTHAME®, CERARION, MIGHTION, Fast-decay phosphor

Fire Detection
InAsSb photodiode, InGaAs area image sensor, UV tron, Photomultiplier tube, PMA-12 Photonic multichannel analyzer

Evaluation of Plant and Algae Production Capacity
Plant photonic measurement technology

High-performance Liquid Chromatography
Si photodiode, CMOS image sensor, Xenon lamp, Deuterium lamp

Hydroponic Fertilizer Monitors
Nitrate-ion concentration monitoring device

Infrastructure Diagnostics
Neutron imaging, InGaAs area image sensor

Early Detection of Microbes and Viability Testing
Early detection of microbes and viability testing using UV excitation and UV fluorescence

Underwater Photonic Communications
High-speed response Photosensor module, High-speed response Photomultiplier tube

Particulate Measurement
Scintillation probe

Fluorescent X-ray Spectrometry/X-ray Diffraction
Capillary lens, X-ray flat-panel sensor, CCD area image sensor

Atmospheric Monitoring
LIDAR laser for atmospheric environmental monitoring

Soil Analysis
LIBS module

Ground Measurement
Compact FTIR engine, InGaAs area image sensor

Water-quality Monitors
Silicon photodiode, Xenon flash lamp

Decommissioning and Environmental Measurement
Li neutron scintillator, Radiation-resistant camera

Radiation Measurement
Photomultiplier tube, Radiation detection module

Laser Nuclear Fusion
Laser nuclear fusion driver

Diagnosis of Condition of Agricultural Products
Contactless spectroscopic measuring instrument

Air Cleanliness
Excimer lamp

Evaluation of Environmental Risk in Wastewater and River Water
Algal bioassay

Atmospheric monitoring
Ground measurement
Plastic sorting
Laser nuclear fusion
Decommissioning and environmental measurement
Radiation measurement
Underwater photonic communication
Water-quality monitor
Fire detection
Infrastructure diagnosis
Diagnosis of condition of agricultural products
Soil analysis
Evaluation of environmental risk in wastewater and river water

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HPK is a Proud Participant in the UN Global Compact.

WE SUPPORT UN GLOBAL COMPACT

Promoting Environmental Management

HPK Fundamental Environmental Policy

Principle	Hamamatsu Photonics, as a company that contributes to society through photonics technology, aims to realize a sustainable society toward a future with balance among all forms of life, whilst considering the importance to harmonize environment with society and economy.
Policy	<ol style="list-style-type: none"> 1. Providing Environmentally Friendly Products Manage chemical substances contained in products, as well as develop and provide products that contribute to environmental improvement and reduce the burden throughout the product life cycle. 2. Actions to Address Environmental Activities Encourage all our employees to take environmentally friendly actions, achieving our environmental goals based on the identification of risks and opportunities that can influence our business activities, products and services. 3. Protection of the Environment, Prevention of Pollution Address energy saving, global warming prevention, waste reduction, sustainable resource use, chemical management, biodiversity protection, conserving water and preventing pollution. 4. Compliance of Environmental Regulations Comply with domestic and international legal requirements, individual agreements and other requirements to which we subscribe voluntarily. 5. Continual Improvement of Environmental Management System Make efforts to improve our environmental performance by the continual improvement of our environmental management system, through the evaluation of the environmental impact at regular intervals. 6. Promoting Environmental Communication Promote environmental consciousness and friendly communication with stakeholders and our employees by widely disclosing environmental information both internally and externally.

Environmental Management System

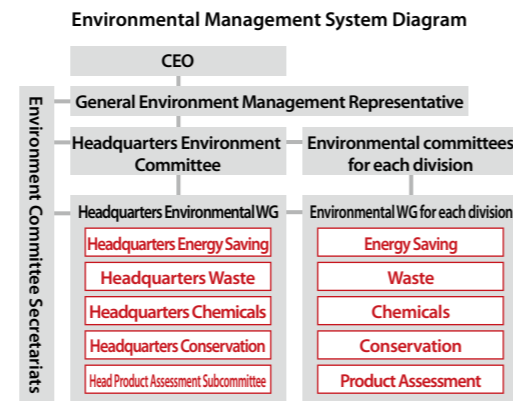
Framework for Promoting Environmental Management

Under the HPK Fundamental Environmental Policy, each business year we set environmental goals and targets for our environmental management system (EMS). We evaluate results from our activity, and work to constantly improve our EMS on the basis of management review.

To implement the above cycle smoothly, we have established a Headquarters Environmental Committee that is directed by a General Environment Management Representative (Kenji Yoshida, Managing Director) and serves as a decision-making body for matters pertaining to our EMS. The Headquarters Environmental Committee is composed of five specialized environmental working groups, each division's environmental committee, and the Environment Committee Secretariats.

By establishing a similar organizational structure in each division, integrated environmental activities are made possible.

Each division has received ISO14001 certification, an international standard for environmental management systems.



Organizations That Acquired ISO Certifications

Organization	Site	Acquisition Date
Main Office	Main Office	March 2012
Central Research Lab	Central Research Lab	March 2012
Electron Tube Div.	Toyooka Factory and Tenno Glass Works (Koso Corporation, Takaoka Electronics Co., Ltd.*)	December 2003 (December 2011, January 2018)
Solid State Div.	Main Factory and Mitsue Factory, Shingai Factory	December 2003 (January 2012)
Systems Div.	Joko Factory	August 2004
Miyakoda Factory	Miyakoda Factory	February 2012

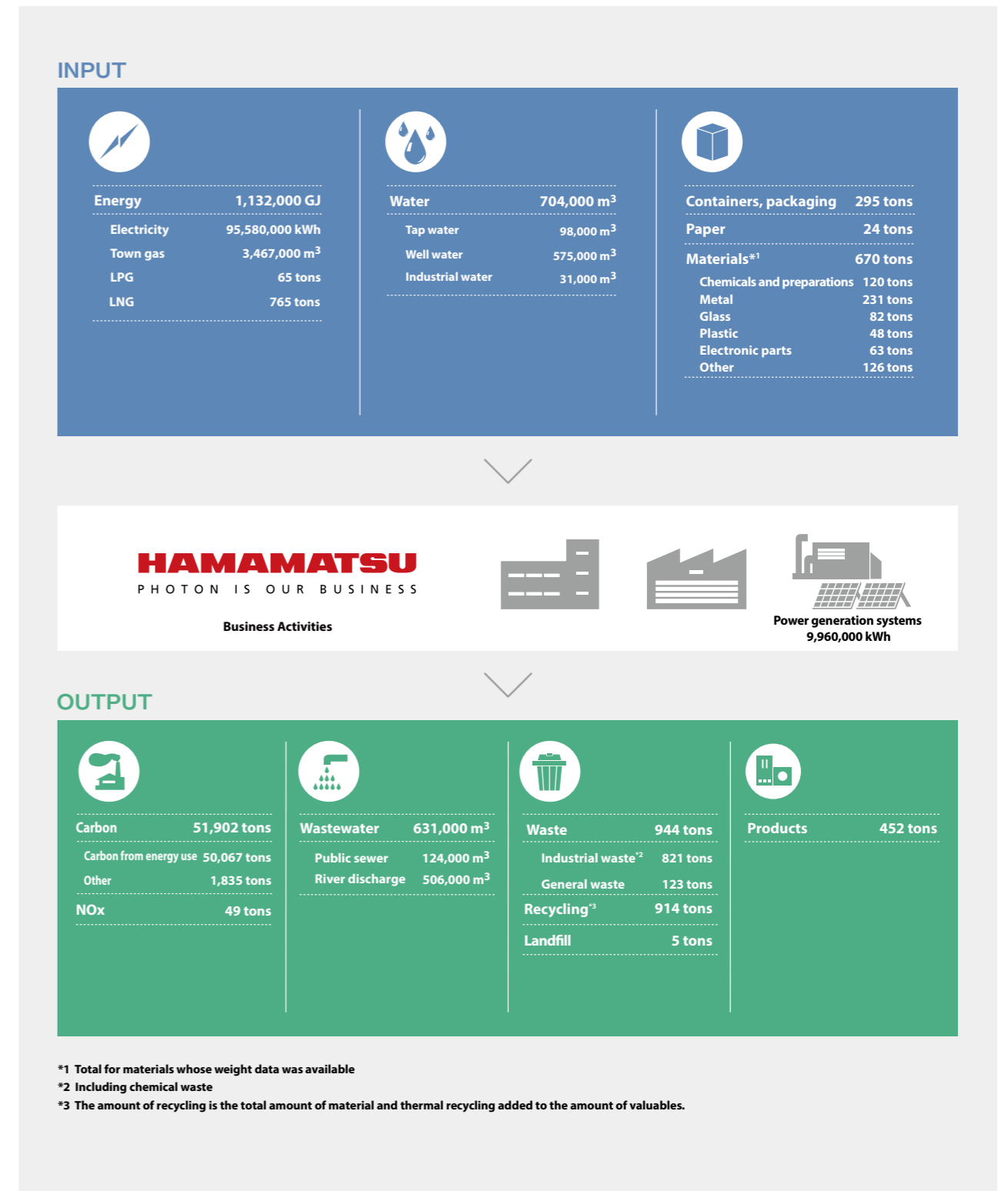
*ISO 14001 certification includes Koso Corporation and Takaoka Electronics Co., Ltd., an affiliated company.

Environmental Initiatives of the Photonics Group

Under the HPK Fundamental Environmental Policy, we will go forward with our environmental initiatives with the cooperation of our affiliated companies. We monitor energy usage, greenhouse gas emissions, and waste generation, while considering more effective measures.

Environmental Impact of Business Activities

We are quantifying the environmental impact of our business activities and working to reduce our impact on the environment. The following figures are a summary of our environmental impact for fiscal year 2018.



Environmental Accounting

We are internally promoting environmental accounting as a means of providing information necessary for environmental management.

Dealing with Risks

Framework for Reducing Environmental Risks

HPK is working to reduce impacts from contamination of living environments from air, water, noise, soil and odor pollution, or to prevent them where possible. We regularly measure and analyze wastewater, noise and vibration. When problems are found, we take appropriate measures, while striving actively to ensure compliance with environmental laws and regulations. Moreover, the Headquarters Conservation Working Group meets four times a year to inspect environmental-preservation facilities at each business location.

No violations of environmental law, fines for environmental infractions or major accidents occurred with respect to HPK during fiscal year 2018.



Underfloor inspection of waste gas treatment equipment



Wastewater analysis

Emergency Response Training

HPK has prepared accident and disaster response manuals, installs and inspects disaster-response equipment, and regularly holds disaster-response training sessions. Training sessions in fiscal year 2018 included training on response to chemical spills, evacuation drills in preparation for indoor gas leaks and training on respirator tank attachment. Company-wide disaster-preparedness drills were conducted twice in fiscal year 2018.



Training in response to chemical spills



Training on attachment of respirators

Targets and Results of Environmental Activities

Medium-Term and Long-Term targets

Item	Medium-/long-term targets	Item	Medium-/long-term targets
Environmental Management Systems	<ul style="list-style-type: none"> → Advancement of environmental management systems (EMS) → Support and improvement of the objectives and targets of the Fundamental Environmental Policy 	Fighting Global Warming	<ul style="list-style-type: none"> → Reducing energy consumption per unit of sales 8% by fiscal year 2021 compared to 2013 → Reducing energy consumption per unit of sales 18% by fiscal year 2031 compared to 2013 → Using renewable energy 5% by fiscal year 2031
Making Products Environmentally Friendly	<ul style="list-style-type: none"> → Measures to develop and manufacture environmentally friendly products and expand operations to new markets and customers 	3R Activities	<ul style="list-style-type: none"> → Support of landfill rate below 1.8% company-wide → Achievement of landfill rate below 1% company-wide by fiscal year 2021
Appropriate Management of Chemicals	<ul style="list-style-type: none"> → Establishment of appropriate systems for managing chemicals → Promotion of understanding and management of chemical hazards → Possession of GHS SDS in 85% or more fiscal year 2022 	Protect Water Resources	<ul style="list-style-type: none"> → Reducing water use per unit of sales 5% by fiscal year 2021 compared to 2016
Prevention of Pollution	<ul style="list-style-type: none"> → Compliance with laws and regulations and efforts to prevent environmental pollution 	Environmental and Social Communication	<ul style="list-style-type: none"> → Promoting of environmental communication

Targets and Results in Fiscal Year 2018 and Activity Targets in Fiscal Year 2019

Item	Main targets in fiscal year 2018	Main results in fiscal year 2018	Evaluation	Main targets in fiscal year 2019
Environmental Management Systems	<ul style="list-style-type: none"> → Continued maintenance and improvement of EMS at business locations certified under ISO14001 	<ul style="list-style-type: none"> → Underwent maintenance/renewal auditing from external auditors. → Advanced support for the revised ISO14001 and obtained 2015 certification at all previously certified locations. 	✓	<ul style="list-style-type: none"> → Continued maintenance and improvement of EMS at business locations certified under ISO14001
	<ul style="list-style-type: none"> → Compliance with environmental laws and regulations 	<ul style="list-style-type: none"> → Violations of environmental laws and regulations: 0 	✓	<ul style="list-style-type: none"> → Compliance with environmental laws and regulations
Making Products Environmentally Friendly	<ul style="list-style-type: none"> → Company-internal/external operation based on the Standards for Use of Environmentally Controlled Substances (Management of Chemical Substances) and update of the Standards → Advancement of R&D in environmentally contributing and friendly products 	<ul style="list-style-type: none"> → Updated to version 15 of Standards for Use of Environmentally Controlled Substances. → Provided a presentation on green procurement (to business partners) and in-house training (in Japan: 8 times; at overseas affiliates and dealerships: 7 times). → Advancement at each business location 	✓	<ul style="list-style-type: none"> → Company-internal/external operation based on the Standards for Use of Environmentally Controlled Substances (Management of Chemical Substances) and update of the Standards → Advancement of R&D in environmentally contributing and friendly products
	Appropriate Management of Chemicals			
	<ul style="list-style-type: none"> → Promoting the collection of GHS compliant SDSs 	<ul style="list-style-type: none"> → The ratio of holding GHS compliant SDSs is 84.4% 	✓	<ul style="list-style-type: none"> → Promoting the collection of GHS compliant SDSs
	<ul style="list-style-type: none"> → Ensuring employees treat chemicals properly 	<ul style="list-style-type: none"> → Held educational trainings for appropriate use of chemical substances, attended by a total of 542 people. 	✓	<ul style="list-style-type: none"> → Ensuring employees treat chemicals properly
Prevention of Pollution				
	<ul style="list-style-type: none"> → Reduce VOC emissions into atmosphere per unit of sales by 30% compared to 2000 and recovery rate of 50% or higher 	<ul style="list-style-type: none"> → 52.7% reduction, recovery rate: 63.1% 	✓	<ul style="list-style-type: none"> → Reduce VOC emissions into atmosphere per unit of sales by 30% compared to 2000 and recovery rate of 50% or higher
	<ul style="list-style-type: none"> → Complying with the self-regulation standards 	<ul style="list-style-type: none"> → Confirmed and conformed to environmental regulations. Inspected our facilities that could affect the environment 	✓	<ul style="list-style-type: none"> → Complying with the self-regulation standards
Fighting Global Warming				
Making Business Activities Environmentally Friendly	<ul style="list-style-type: none"> → Saving energy programs and its promotional activities 	<ul style="list-style-type: none"> → Promoted energy-saving activities as a Fun to Share sponsor company. - Held an energy-saving contest at home in 2018 with 637 participants. - 11 business locations in Japan participated in the Light Down Campaign. 	✓	<ul style="list-style-type: none"> → Saving energy programs and its promotional activities
	<ul style="list-style-type: none"> → Promoting the introduction of renewable energy 	<ul style="list-style-type: none"> → Introduced Chubu Electric Power Co., Inc.'s "CO₂-free electrical power" in October 2018. 	✓	<ul style="list-style-type: none"> → Examining expanded introduction of renewable energy
	<ul style="list-style-type: none"> → Reducing energy use per unit of sales by at least 5% compared to 2013 	<ul style="list-style-type: none"> → Reducing energy use per unit of sales by 19.2% compared to 2013. 	✓	<ul style="list-style-type: none"> → Reducing energy use per unit of sales by at least 6% compared to 2013 and by more than 1% compared to the previous fiscal year
3R Activities				
	<ul style="list-style-type: none"> → Support of landfill rate below 1.8% company-wide 	<ul style="list-style-type: none"> → Landfill rate was reduced to 0.4% 	✓	<ul style="list-style-type: none"> → Support of landfill rate below 1.8% company-wide
	<ul style="list-style-type: none"> → Support of management of waste-disposal contractors 	<ul style="list-style-type: none"> → Through confirmation, etc. of implementation with waste-disposal contractors, it was confirmed that contracted waste disposal is handled correctly. 	✓	<ul style="list-style-type: none"> → Support of management of waste-disposal contractors
Protect Water Resources				
	<ul style="list-style-type: none"> → Reducing water use per unit of sales 5% by fiscal year 2021 compared to 2016 	<ul style="list-style-type: none"> → Reduced water use per unit of sales by 14.9% compared to 2016 	✓	<ul style="list-style-type: none"> → Reducing water use per unit of sales 5% by fiscal year 2021 compared to 2016
	<ul style="list-style-type: none"> → Evaluation of water risks 	<ul style="list-style-type: none"> → Using water-risk evaluation tools, water risks were evaluated at all production facilities and research centers. 	✓	<ul style="list-style-type: none"> → Evaluation of water risks
Environmental and Social Communication	<ul style="list-style-type: none"> → Promoting biodiversity conservation activities 	<ul style="list-style-type: none"> → Distribution of Happy Memorial Trees → A total of 529 people participated in the following activities. - Local cleaning activities, conducted 12 times during the year. - The Lake Hamana Cleanup Campaign, tree planting in Tsunami mitigation forest, etc. 	✓	<ul style="list-style-type: none"> → Promoting biodiversity conservation activities
	<ul style="list-style-type: none"> → Publishing our environmental information to the public and our employees 	<ul style="list-style-type: none"> → Disseminated environmental information including environmental reports and online dissemination. → Posted ECO communications 4 times a year in company newsletter. 	✓	<ul style="list-style-type: none"> → Publishing our environmental information to the public and our employees

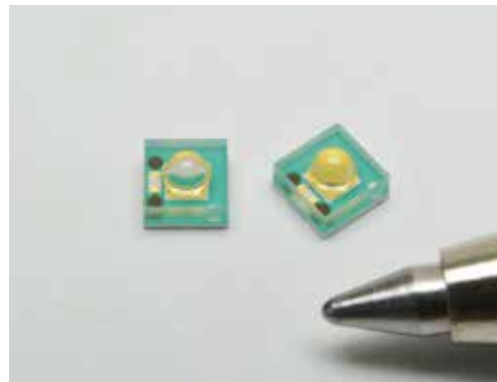
Evaluation standard: Achieved ✓

Making Products Environmentally Friendly

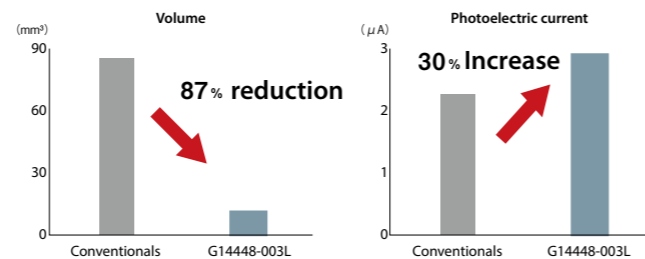
Developing Environmentally Contributing and Friendly Products

HPK strives to expand sales of products for which environmental measures are built into the product. These products incorporate fewer resources (are smaller and lighter), use less energy, or have a longer working life than conventional products. They work to reduce environmental impact and/or contribute to solutions of environmental problems. In this section, we look at some case studies for fiscal year 2018.

Infrared Detector and Infrared LED

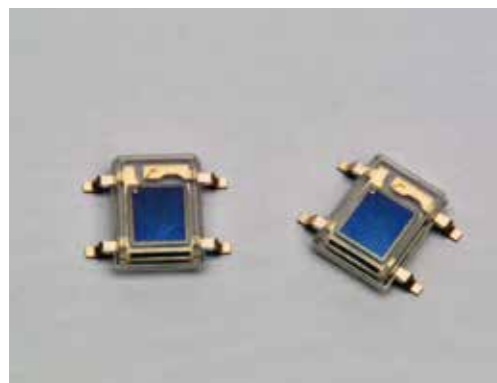


The G14448-003L and L14096-0085GL are, respectively, a compact near-infrared detector element and infrared LED, designed for incorporation into handy-type and mobile devices. These devices adopt a surface-mounted COB package with lens for narrow directionality, delivering large photoelectric current despite their compact size.

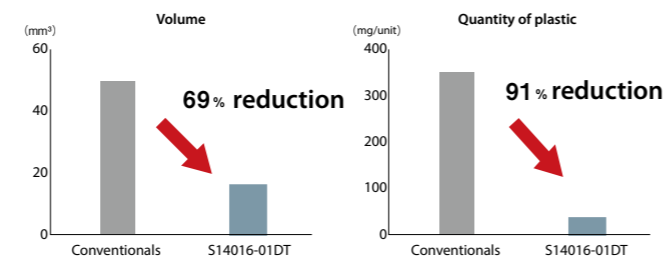


Products > Optical sensors > Infrared detectors > InGaAs photodiodes

Si-PIN Photodiode



The S14016-01DT is an Si PIN photodiode for the visible-to-near-infrared spectrum. It adopts a compact, surface-mounted plastic package. The compact, thin-profile design and retooled die reduce both the volume of the product and the quantity of plastic required to cast each unit.

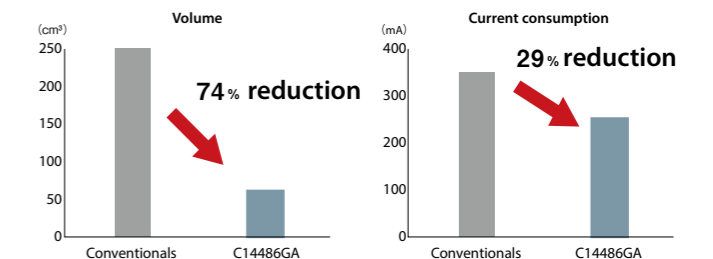


Products > Optical sensors > Photodiodes > Si photodiodes

Mini Spectrometer



The C14486GA is a spectrometer (polychromator) consisting of an optical device, image sensor and drive circuit in a compact, low-profile housing. Adoption of a TF type optical system and compact image sensor enable compact size and low current consumption with least change in characteristics compared with previous products.

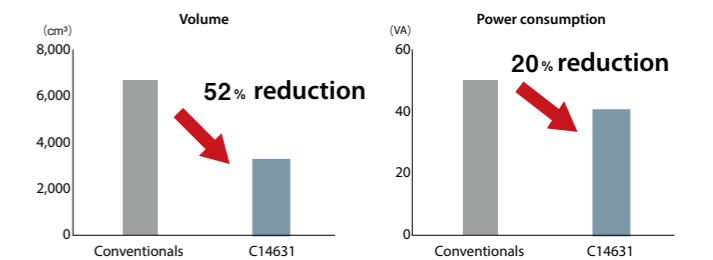


Products > Photometry systems > Mini-spectrometer > Mini-spectrometers

Photonic Multichannel Analyzer

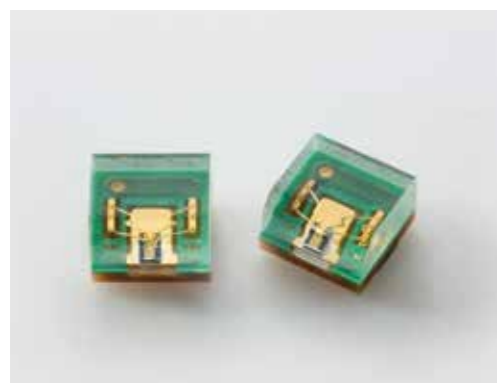


The C14631 is a compact spectrophotometric device that integrates a spectroscopy with a light detector. An electronically cooled rear-face-incidence CCD linear image sensor is adopted, along with an improved drive circuit, yielding smaller size and lower current consumption than previous products.

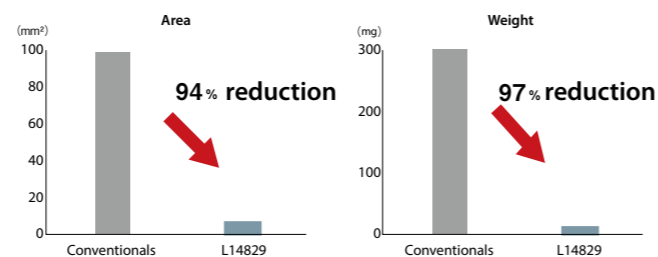


Products > Photometry systems > Multichannel spectral system

Pulsed Laser Diode

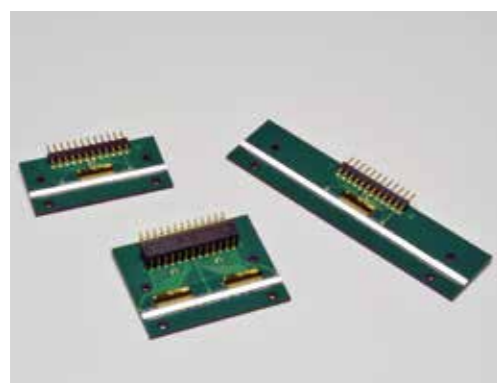


The L14829 surface-mounted pulsed-laser diode finds a wide variety of applications, including automobile collision prevention, range-finding and security. A plastic package is adopted for compact size and light weight.

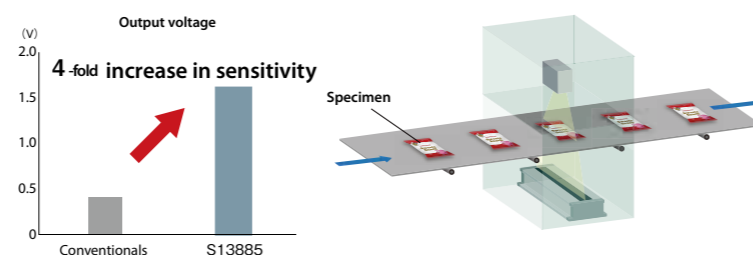


Products > Lasers > Semiconductor lasers > Pulsed laser diodes (PLD)

Photodiode Array with Amplifier



The S13885/S13886 Series of photodiode arrays with amplifiers is used in the detectors of X-ray equipment used to inspect food for contaminants. This series delivers four times the sensitivity of previous models, enabling a corresponding four-fold extension in the working life of the X-ray source filament and of the fluorescent body of the photodiode array. This achievement dramatically reduces waste from discarded parts.



Products > Optical sensors > Photodiodes > Si photodiode arrays with amplifier

Conforming to Regulations Regarding the Chemicals Contained in Our Products

Compliance with Regulations

Since 2004, we have been managing chemical substances in products. We are committed to staying up to date with the latest information regarding chemicals through industrial associations and responding swiftly and appropriately to new regulations.

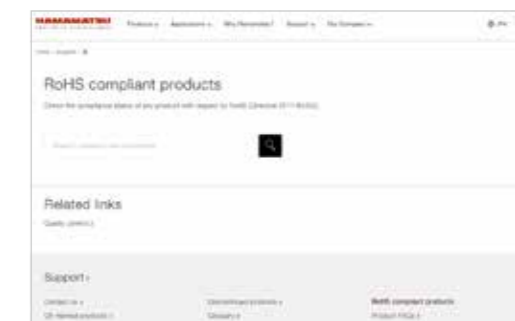
In response to the RoHS Directive, we have completed and established compliance measures to the current 6 restricted substances. We have been supplying products conforming to the current directive¹ while promoting upcoming measures for the new 4 phthalates with our business partners.

We are also working with them on procurement regarding conflict minerals. We continue to provide our customers with appropriate information regarding these minerals.

¹ Excluding some custom products subject to special requests from customers

Our Company > Corporate social responsibility > Procurement > Our Approach to Conflict Minerals

Support > RoHS compliant products



"RoHS compliant products" website

Green Procurement and Purchasing

To conform to regulations, such as RoHS Directive, chemical substances contained in products and to provide products that meet the demands of our customers, we have established company-wide management standards for chemical substances. We issued the 15th edition of the standards in October 2018.

On the basis of these standards, we conduct green procurement surveys with our business partners. These surveys collect information on the concentrations of regulated chemicals in parts and how the parts are used. The survey results are collected in a company-wide system that stores environmental information and the results are used for the centralization of environmental management of parts and the evaluation of compliance with regulations. In fiscal year 2018, we hold green procurement briefing for our business partners.

We also promote purchasing of environmentally friendly office supplies. Our green purchasing rate for fiscal year 2018 was 97.4%, exceeding our 90% target rate.

Our Company > Corporate social responsibility > Procurement > Green procurement



Green Procurement and Chemical Substance Management Guide



Green procurement briefing (business partners)

Making Business Activities Environmentally Friendly

Fighting Global Warming

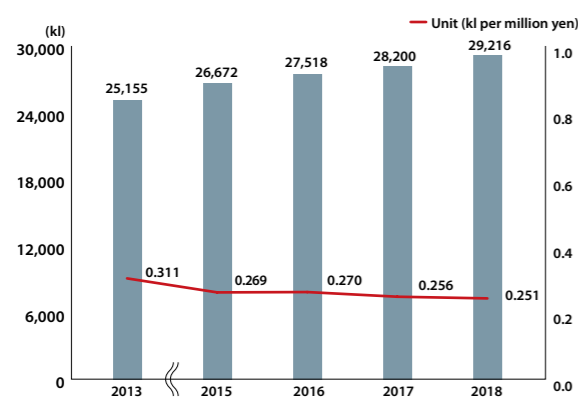
Transition of Energy Consumption and Carbon Emissions

HPK has set a medium-to-long-range target of reducing energy consumption per unit of sales more than 18% by fiscal year 2031 compared to fiscal year 2013. This target drives HPK's commitment to activities to conserve energy.

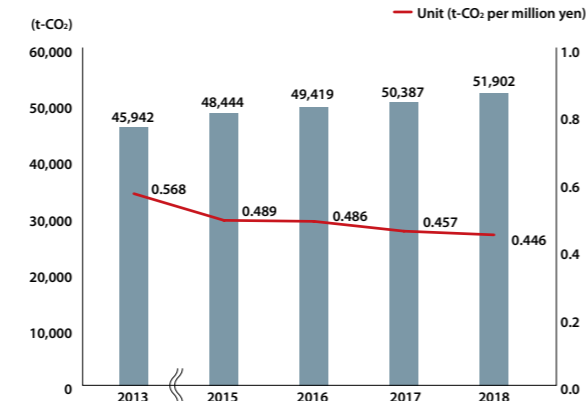
During the fiscal year 2018, HPK reduced energy consumption per unit of sales by 19.2% in comparison with fiscal year 2013, far exceeding its target of over 5%. We accomplished this result by implementing energy-saving measures in buildings and adopting equipment compliant with METI's Top Runner program, among other measures. HPK's emissions of CO₂¹ increased 3.0% year-on-year (YoY), though they decreased 2.4% on a per-unit-of-sales basis. In greenhouse gases other than energy-originated CO₂, we reduced emissions of semiconductor fabrication gases such as PFCs and SF₆s through the introduction of abatement systems for combustion and plasma under a program which began in 2006. HPK also expanded adoption of renewable energy through the introduction of Chubu Electric's CO₂-free Energy in October 2018.

HPK will continue its quest to reduce energy consumption and do its part to restrain global warming.

Energy use and its ratio of sales



Carbon emissions and its ratio to sales



¹ Carbon emissions refer to a calculation range based on the Law Concerning the Promotion of the Measures to Cope with Global Warming. The coefficient used for carbon emissions from electrical power is 0.417 (value obtained in fiscal year 1990 by the Federation of Electric Power Companies of Japan).

Environmental Measures in New Buildings

The market for infrared light solutions is expected to grow briskly in the near future. As part of its preparations, HPK bolstered its production capacity for compound optical semiconductor elements by constructing the Miyakoda Factory No. 3 Building.

Our No. 3 Building was built with measures to reduce environmental impact and grapple with global warming. Examples include installation of highly efficient equipment such as Top Runner-certified motors, LED lighting and high-efficiency HVAC, as well as energy-efficient solutions such as light controls linked to daylight sensors and systems with highly efficient heat sources.

This building has earned an A (Excellent) rating under the Comprehensive Assessment System for Built Environment Efficiency (CASBEE).



Exterior view of No. 3 Building, Miyakoda Factory

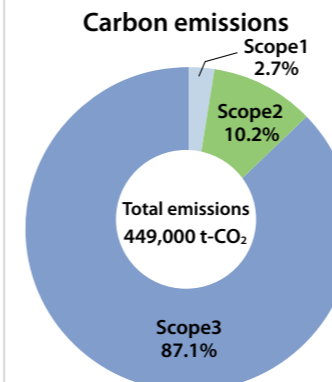
LED lighting

Modular chillers

Value Chain Carbon Emissions

To grasp the environmental impact of the value chain², HPK is working on the calculation of Scope 3 (shown below) which is based on the Greenhouse Gas (GHG) Protocol.

Going forward, we will expand the calculation scope of Scope 3, improve accuracy, and strive to reduce emissions throughout the value chain.



Category	Emissions (t-CO ₂)	(%)
Scope1 All Direct Carbon Emissions	12,045	2.7
Scope2 Indirect Carbon Emissions ³	45,902	10.2
Scope3 Other Indirect Carbon Emissions	390,563	87.1
(Category 1: Purchased products and services)	(219,224)	(56.1)
(Category 11: Use of sold products)	(84,586)	(21.7)
(Category 2: Capital goods)	(68,944)	(17.7)
(Other: Business travel, Employee commuting, logistics, disposal, etc.)	(17,809)	(4.5)

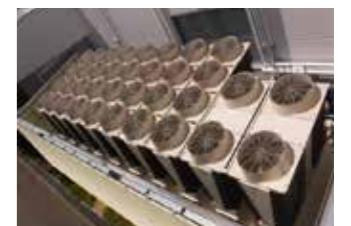
- A value chain refers to the full life cycle of a product or process, including material sourcing, production, consumption and disposal processes. Includes the upstream and downstream parts of our supply chain.
- The carbon emission factor we use is Chubu Electric Power's emission factor.

Our Company > Corporate social responsibility > Environmental initiatives > Making Business Activities Environmentally Friendly > Fighting Global Warming

Energy Savings Through Upgrading of HVAC Heat Source

HPK is upgrading existing systems while installing Top Runner-compliant equipment (including high-efficiency equipment). During fiscal year 2018, HPK introduced a total of 67 energy-saving systems, including high-efficiency chillers, electric motors, transformers and LED lighting.

Mitsue Factory, which upgraded its heat-source equipment in April 2017, slashed its energy consumption by approximately 240 kL/year. This energy saving is equivalent to an approximately 700 t/year decrease in CO₂ emissions.



Upgraded HVAC heat source

Upgrading to Non-HCFC Equipment

Hydro Chloro-fluoric carbon (HCFC) widely used in air conditioners, refrigerators and freezers is a substance that destroys the ozone layer and has a high global warming potential. After the Montreal Protocol was revised, Japan changed its "the Ozone Layer Protection Act", eliminating HCFC by year 2020. Equipment that use HCFC are managed using a company wide database. We strive to upgrade equipment that use HCFC to equipment that do not use HCFC.



Upgraded HVAC heat source

Winner of Shizuoka Prefecture's 2017 Environment-friendly Building Award

In February 2018, the Community and Environmental Affairs Department of the government of Shizuoka Prefecture bestowed on HPK its Environment-friendly Building Award. Shingai Factory No.1 Building received a honorable mention in recognition of its superb environment-friendly design.

The award was based on the environmental building plan that HPK submitted in accordance with Shizuoka Prefecture's Global Warming Counteraction Ordinance. It honored the architects and designers responsible for this building, which CASBEE⁴ Shizuoka rated as outstanding. CASBEE Shizuoka assigned Shingai Factory No. 1 Building a rank of "A" (Excellent).



Eco-friendly Building Award

⁴ Comprehensive Assessment System for Built Environment Efficiency (CASBEE)

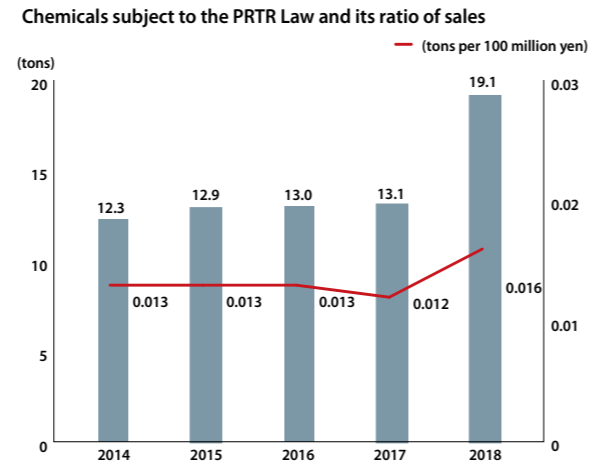
A general assessment system for evaluating the environmental performance of buildings. Factors considered include energy-saving, resource-saving and recycling performance, indoor comfort and consideration of surrounding natural scenery.

Appropriate Management of Chemicals

Handling of Chemicals Subject to the Pollutant Release and Transfer Register (PRTR) Law

In fiscal year 2018, we used 19.1 tons of substances designated as class 1 chemical substances under the PRTR Law¹ (yearly use of 1 kg of more by all divisions subject to tracking). This is because the CFC has been using plenty of chemicals since it started operations. In 2018, we reported the use of two substances at our Main Factory (2-aminoethanol and hydrogen fluoride and its water-soluble salts).

¹ PRTR Law: A law regarding the promotion of precise knowledge of emissions of designated substances into the environment and management improvements based on that knowledge



Promotion of SDS (Safety Data Sheet) Collection

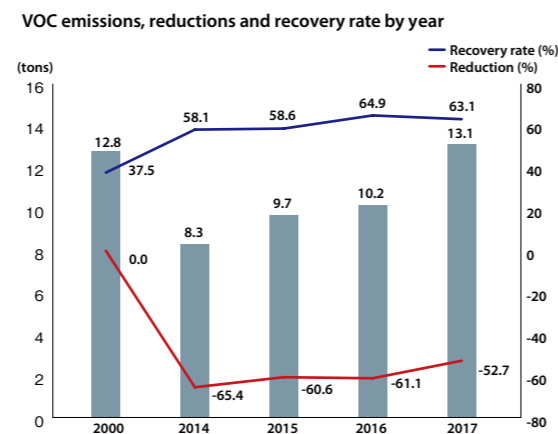
As stipulated in the Industrial Safety and Health Law, SDSs are essential for assuring the safety of workers who handle chemical materials and for reducing the risks of these chemicals to the environment. We are promoting risk assessment of chemical substances and reducing risks in the workplace by promoting the collection of the latest SDSs, putting those SDSs in our internal company database, and disclosing and using them throughout the company.



Reducing VOC (Volatile Organic Chemicals) Emissions

We are working to reduce emissions of VOCs into the atmosphere by reducing our use of VOCs.

In 2017, we worked toward maintaining a 30% reduction in atmospheric emissions compared to 2000 based on unit of sales and achieving a recovery rate of 50% or higher. As a result, we achieved a 52.7% yoy reduction in atmospheric emissions and a recovery rate of 63.1%.



Check for Chemical Handling Condition

The Chemicals Working Groups conducts checks on chemical storage facilities and workplaces that handle chemical substances. When problems are found, they are discussed and solutions are found. This information is then shared within the Headquarters Chemicals Working Group.



Performing a check on a chemical storage

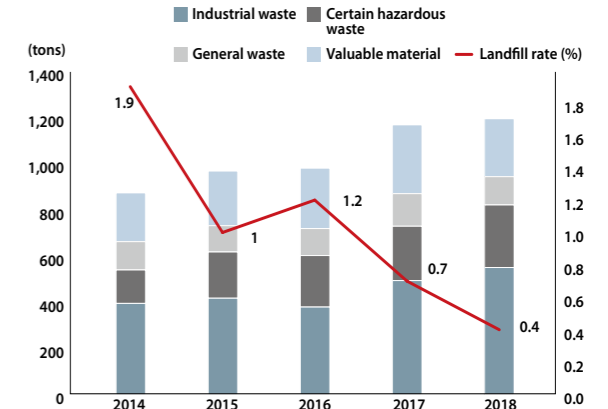
3R Activities

Reducing Waste Levels to Zero

We have been promoting 3Rs¹ and managing wastes properly to achieve the idea of zero emissions², to reduce their negative impact on the environment and use resources efficiently. For fiscal year 2018, we recorded the landfill rate³ of 0.4% and achieved zero emissions. This was accomplished by separating and reducing wastes, reducing inferior goods, reusing equipment and packaging materials and promoting recycling.

- The 3Rs stands for Reduce, Reuse, and Recycle.
- Zero emission: The idea that we should strive for a society with no waste through resource conservation and waste reduction in production activities, and by recycling the waste that is unavoidably generated. We define that as having a landfill rate of 3% or less for all wastes, considering The Target for Establishing Recycling-based Society in Shizuoka Prefecture.
- Landfill rate shows a ratio of Output to the amount of land filed wastes.
- Certain Hazardous Wastes which are designated by Japanese Waste law, including sludge, acid waste, and waste alkaline (these contain heavy metals, organochlorine compounds, dioxin, etc., over a certain concentration), as well as waste PCBs, waste asbestos, waste mercury, and so on.
- The amount of recycling is the total amount of material and thermal recycling added to the amount of valuable materials.

Output and Landfill rate



	2014	2015	2016	2017	2018
Output (tons)	873	968	980	1,168	1,194
(Industrial waste)	(395)	(417)	(379)	(494)	(550)
(Certain hazardous waste ⁴)	(145)	(200)	(223)	(235)	(271)
(General waste)	(123)	(114)	(117)	(141)	(123)
(Valuable material)	(211)	(237)	(261)	(298)	(251)
Recycling ⁵ (tons)	745	675	699	873	914
Landfill (tons)	17	9.5	11.3	8.7	4.6

Introducing our Green Waste-Activities for Children

The child education program hosted by the Shizuoka Industrial Waste Association was held at our Toyooka Factory in August 2018. 40 participants consisting of elementary school children and their parents visited us, while learning a lot about our environmentally friendly activities including manufacturing processes, waste storage systems, waste water facilities, and solar power plant. The children were very impressed at the number of waste classifications.



Introducing our Green Waste-Activities for Children

Promoting 3Rs

We're taking a new initiative: Collecting Used Toothbrushes for Recycling to promote the 3Rs in our business domain. It's actual recycling scheme is handled by an outside organization that gives us special points according to the volume we collect. These points can be used for charitable donations. In a short time, we have already collected 3.6 kg in total.



Ensuring Proper Disposal at Our Contracted Waste Facilities

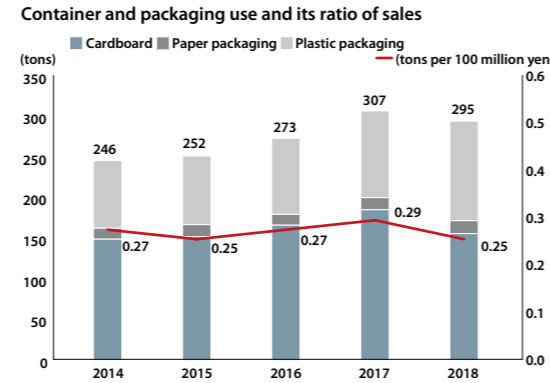
We ensure that all our contracted waste facilities dispose our wastes in an environmentally sound manner. All disposal processes from transporting to landfilling have been reviewed. We have not observed any improper waste disposals to date and will report such cases, if any, to the proper authority.



Shipping Measures

Reducing Containers and Packaging Materials

We are using packaging materials as efficiently as possible to improve product accommodation ratios. In fiscal year 2018, our use of containers and packaging materials was 295 tons. Our use of containers and packaging materials per unit of sales was 0.25 tons per 100 million yen.



Reducing Packaging Materials and Shipping Processes Through Specially Designed Packaging Box

Based on environmental considerations, we have developed a special packaging box for our xenon flash-lamp power supply. It allows us to reduce the volume of packaging cartons by approximately 68 % and minimize shipping processes by approximately 80 %. Moreover, it can be folded for easy disposal by the customer.



Before : 3.5 kg / box



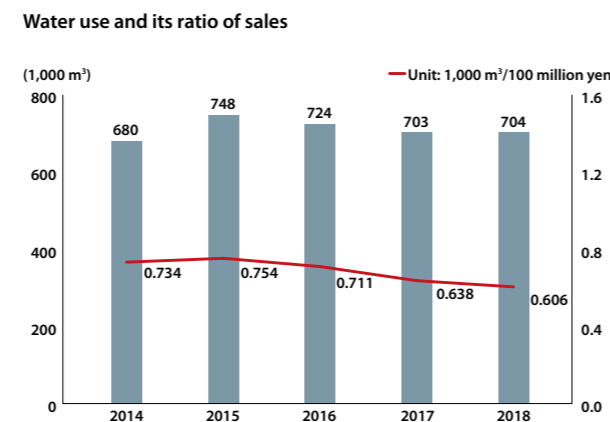
After : 1.1 kg / box

Protecting Our Water Resources

Using Water Resources Effectively and Risk Assessment

HPK recognizes the importance of water resources and works toward reducing water use and recycling the water that we do use. At the main factory, we introduced a pure water production facility that half of the water it uses is recycled water. As a result, we reuse approximately 200,000 m³ of water resources annually. In addition, we participate in groundwater recharge projects and forest conservation work with stakeholders to preserve groundwater in the region.

HPK also participates and responds to CDP Water, an international project on which many companies around the world disclose information on water. We regularly evaluate water risks at domestic and overseas production sites, recognize water problems and set their targets.



Site Data

From Oct. 1, 2017 to Sep. 30, 2018

Environmental Impact (Unit)	Toyooka Factory	Tenno Glass Works	Joko Factory
Energy (thousand GJ)	306.8	4.2	24.5
Water (thousand m ³)	184.2	1.8	7.0
Chemicals subject for PRTR Law ¹ (tons)	0.38	0.003	0.005
Paper (tons)	6.3	0.2	3.3
Containers and Packaging Materials (tons)	161.1		21.7
Carbon emission from the energy ² (tons)	13,436	185	1,049
Other Carbons ³ (tons)	1.0	—	3.3
Wastewater (thousand m ³)	184.2	1.8	7.0
Waste (tons)	222	4.4	29
Landfill (tons)	0.19	0.06	0.22
Landfill rate (%)	0.1	1.0	0.4

Environmental Impact (Unit)	Main Factory	Mitsue Factory	Shingai Factory	Miyakoda Factory
Energy (thousand GJ)	427.7	61.2	83.8	94.2
Water (thousand m ³)	351.1	48.8	28.5	45.4
Chemicals subject for PRTR Law ¹ (tons)	12.8	0.08	1.2	4.4
Paper (tons)	5.5	2.0	1.1	0.4
Containers and Packaging Materials (tons)	111.1		—	0.5
Carbon emission from the energy ² (tons)	19,313	2,677	3,649	4,096
Other Carbons ³ (tons)	—	1,722	—	81.3
Wastewater (thousand m ³)	303.5	48.8	28.5	40.8
Waste (tons)	520	42	41	29
Landfill (tons)	1.55	0.21	0.08	1.18
Landfill rate (%)	0.3	0.3	0.1	2.8

Environmental Impact (Unit)	Main Office	Central Research Laboratory	Industries Development Center	Tsukuba Research Center
Energy (thousand GJ)	2.9	93.5	27.2	3.5
Water (thousand m ³)	1.5	33.5	2.1	0.2
Chemicals subject for PRTR Law ¹ (tons)	—	0.14	0.01	0.01
Paper (tons)	2.6	1.8	0.2	0.1
Containers and Packaging Materials (tons)	—	—	—	—
Carbon emission from the energy ² (tons)	132	4,094	1,169	145
Other Carbons ³ (tons)	—	27.1	—	—
Wastewater (thousand m ³)	1.5	12.4	2.1	0.2
Waste (tons)	5.3	35	1.8	16.9
Landfill (tons)	0.02	0.76	0.03	0.36
Landfill rate (%)	0.4	1.2	1.2	2.1

*1 Quantities of 1kg or more are designated as class 1 chemical substances under the PRTR Law.

*2 The factor we use to convert power to carbon and calculate the carbon from energy use is 0.417.

*3 The emitted carbons other than carbon from energy use are converted to equivalent amounts of carbon.

Social Initiatives

CSR Initiatives

Principles of CSR Activities

HPK's approach to business ethics, compliance, our Fundamental CSR Policy and Code of Corporate Conduct is on the basis of a clearly stated management philosophy that carries out corporate activities based on an ethical outlook and good sense.



Management Philosophy

Pursuing the unknown where no one has yet explored

We pursue the unknown and unexplored. By leveraging photonics technology to establish new industries and reach for the world's highest levels of manufacturing excellence, we build enterprise value and contribute to the development of science and technology.

Creating New Industries by Elucidating the Nature of Light

We explore fields not yet explained. Based on the knowledge generated by that inquiry, we enhance its our enterprise value by discovering practical applications with which to create new industries and expand our business operations.

Building a Sustainable and Stable Framework for Profitable Operation

We have a duty to generate a stable earnings base and continuous growth on which a long-term development of technology depends. To respond flexibly and quickly to the expansion of the photonics industry and to changes in the business environment, we have formed a framework for the proactive investment in R&D and equipment for continuously stable and high earnings, based on our medium-to-long-term vision.

People, Technology and Knowledge are the Bedrock of Sound Management

We improve ourselves everyday through our work, discovering the things that only we can do. In so doing, we conduct technology development which is backed up by the knowledge, needs, and competitive technologies for building the photonics industry.

We believe it is vital that we, guided by a mind of "Wa", foster a corporate culture that can combine our individual talents to form a whole that is greater than the sum of its parts. At the heart of this effort is a bottom-up operational approach that is focused on the workplace.

"Wa" means collaborative spirit and integration of diversified talents.

Fundamental CSR Policy

- We will cultivate a corporate culture in which every employee acts ethically as a member of society.
- We will actively pursue new frontiers of photonics technology, with the aim of creating new industries.
- We will strictly abide by all relevant laws, regulations and conventions, be they local, national, or international, in letter and in spirit.
- We will share appropriate, accurate information to our stakeholders in a timely manner.
- We will contribute to society and human welfare by offering safe, high-quality photonic products and related services.
- We will ensure that our business activities respect the value of human rights.
- We will provide our employees with a safe and comfortable working environment, as well as resources for continual growth.
- We will strive to develop ecologically-sound, sustainable business activities.
- We will maintain safeguards against unauthorized access to corporate data.
- We will continue to serve as a philanthropic partner within our local communities.

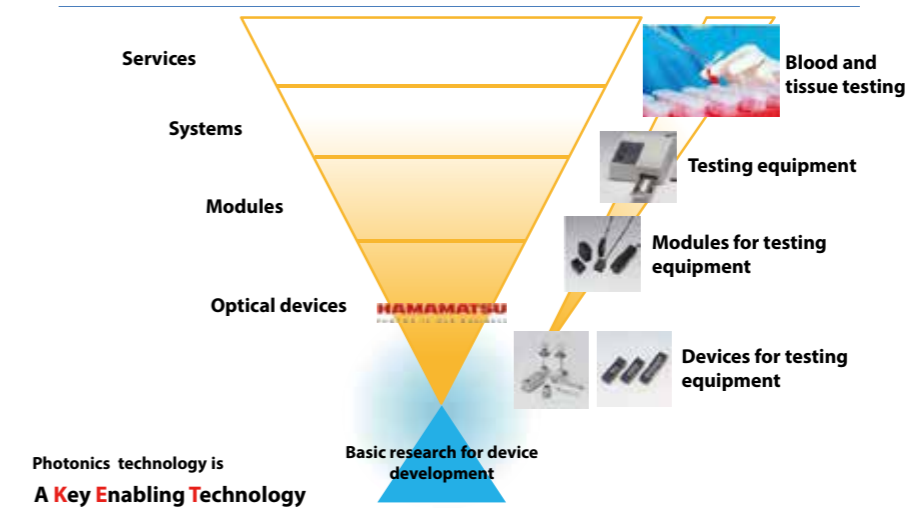
A Key Enabling Technology

The scope of application of photonics technology continues to broaden worldwide. As it proves indispensable in the production and improvement of leading-edge devices used in medical, industrial, and other fields, photonics technology is emerging as a key enabling technology, the driving force behind a technological innovation.

Photonics technology is the foundation of a wide range of industries. Industries that apply photonics technology can be thought of as an inverse pyramid, with the optical devices HPK supplies supporting the entire structure at the bottom.

HPK will continue to press forward with basic research, creating innovative devices that drive socioeconomic development.

Industries That Apply Photonics Technology



Measures on UN SDGs

As proposed by the United Nations for 2030, HPK is committed to doing its part to achieve the Sustainable Development Goals (SDGs). We strictly comply with the 10 Principles of the UN Global Compact. We contribute to the SDGs through our products and technologies that are key for industries that apply photonics technology.

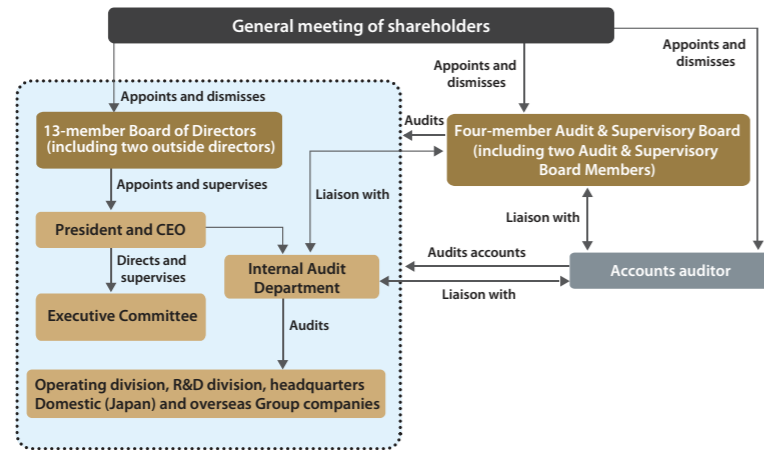
SUSTAINABLE DEVELOPMENT GOALS 17 GOALS TO TRANSFORM OUR WORLD



Governance

Corporate Governance

The Hamamatsu Photonics Group is committed to earning the trust of all stakeholders by delivering long-term improvement in enterprise value. To that end we strive to assemble an optimal and highly effective governance structure.



Compliance

The Hamamatsu Photonics Group establishes the Basic Approach to Corporate Ethics and Compliance with which Group directors and employees must comply and strives to improve employees' ethical awareness and knowledge.

Business Continuity Plan (BCP)

In the face of a large scale natural disaster, we have established a Business Continuity Plan (BCP) to ensure that we continue our business and/or recover operations as quickly as possible. To minimize risks to our business and customers operations, we have in place plans for our response to crisis. This includes preparatory activities, various evacuation training, disaster coordination, and safety confirmation.

The basic policy of HPK' BCP is as follows.

Basic Policies of Business Continuity Plan	
Protection of human life	The continuation of business operations will proceed with first priority given to the protection of the lives of our employees and their families, our customers and related parties.
Continuation of business operations	With foremost consideration given to our employees' safety, we will initiate efforts to quickly put into place the organization necessary to provide a stable supply of products to our customers, thus sustaining the trust of our customers which forms the foundation of our business.
Contribution to society	In addition to resuming the stable supply of products, we will contribute to society by proactively engaging as much as possible with relief efforts in regions affected by the disaster.

Our Company > Corporate social responsibility > Business continuity plan



Disaster Countermeasure Office



Evacuation training

Relationship with Employees

People are the foundation of HPK's management. All employees must be healthy in both mind and body, so that they can realize their capabilities to the fullest. In this spirit HPK works vigorously on various measures to support employees in maintaining and improving their health.

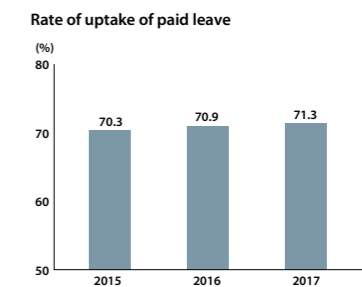
Health Management Initiatives

On February 20, 2018, HPK was certified as one of the "White 500": an "Outstanding Enterprise in Health and Productivity Management." HPK works closely with the health-insurance society and other related organizations to devise comprehensive and planned measures to benefit the health of all employees. Through these efforts, HPK seeks to enable employees to live long and fulfilling lives with a healthy balance of work and family life.



High Rates of Uptake of Paid Leave

To refresh employees in mind and body, keeping them dynamic and effective, vacation time is indispensable. HPK works closely with labor unions to encourage employees to take all of the paid leave they have earned. In fiscal year 2017 the average number of days of paid leave taken by HPK employees was 13.6 days (71.3%).



Low Turnover Rate

HPK's most recent three-year turnover rate of recent new employees (percentage of new employees who joined HPK in April of 2013, 2014 or 2015 and left within three years) is 4.7%.

Toward a Healthy and Long Living Society

In 2002 HPK founded the Hamamatsu Medical Photonics Foundation. The purpose of the Foundation is to "help as many people as possible live long and healthy lives, through photonics technologies for the early detection and treatment of cancer and other diseases." Seeking to make this dream a reality, the following year HPK established the Hamamatsu PET Diagnostic Center. The Hamamatsu PET Diagnostic Center combines a variety of scanning technologies, including PET, CT, MRI and ultrasound scanning, to realize highly precise cancer screening.

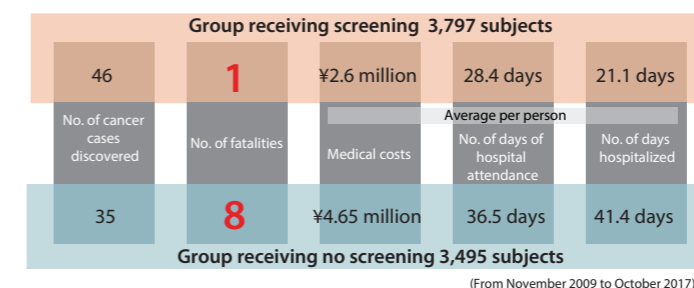


Hamamatsu PET Diagnostic Center

* Not all cancers and encephalopathies are detected.

PET Cancer Screening (Comprehensive Image Diagnosis Focused on PET Examination)

In PET scans for research purposes on policyholders of the Hamamatsu Photonics Group Health Insurance Society, the group that underwent PET cancer screening received early detection of many cancers, with multiple benefits including a reduced fatality rate and lowered medical costs.



Environmental and Social Communication

Promoting Community and Employee Communication through Ecological Activities

Happy Memorial Trees and Tree Planting on Company Grounds

As part of our biodiversity conservation activities, we donated "Happy Memorial Trees" to employees who have built a new home, recently married, or had their children enter primary school. As of September 30, 2018, a total of 831 people have applied to participate in this activity. Of all the applicants, 350 built new homes, 237 were married, and 244 had their children enter primary school. So far, a total of 634 applicants received their trees. Many commemorative photos of themselves with the tree were offered by those employees.

To beautify and maintain the environment, each division continues to make the company grounds greener and utilize Green Curtains in summer.



Happy memorial trees

Environmental Communication Using Various Media

To inform stakeholders of its environmental initiatives in an accessible and engaging manner, HPK disseminates information through a wide variety of media. These media include environmental and social reports, websites and company newsletters.

From November 1 to 3, 2018, HPK hosted Photon Fair 2018, its general trade exhibition. This environmentally friendly event showcased HPK's environmental initiatives in numerous ways, including the use of green energy sources to power some of the exhibition spaces.

[Our Company > Corporate social responsibility > Environmental initiatives](#)



website



Exhibition panel at Photon Fair 2018

Clean-up activities in line with the Biodiversity Hamamatsu Strategy

As an effort to conserve biodiversity, we participate in conservation activities in areas around our businesses and the local municipalities and prefectures. We participate in the "Lake Hamana Cleanup Campaign" to protect local biodiversity and pass on a bountiful nature to future generations. In fiscal year 2018, a total of 529 employees participated in cleanup activities 12 times. In addition, we are planting an acorn to make a forest on the company premises.

We also participate in the "~KALA project" which maintains Tsunami mitigation forest, and the "flower bed project" in which companies plant a flower bed in front of the Hamamatsu station.



Lake Hamana Cleanup Campaign



~KALA project

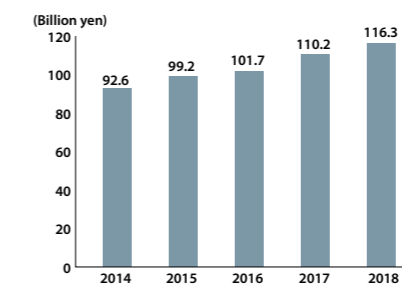


flower bed project

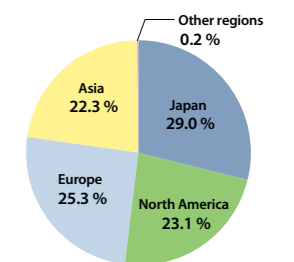
Company Overview

Company Name	Hamamatsu Photonics K.K.
Headquarters	325-6 Sunayama-cho, Naka-ku, Hamamatsu City, Shizuoka Pref. 430-8587, Japan
Established	September 29, 1953
Representative	Akira Hiruma, President and CEO
Capital	34,928 million yen
Sales (Non-consolidated)	116,323 million yen
Employees (Non-consolidated)	3,470
Products	Photonic Detectors, Light Sources, Cameras & Systems

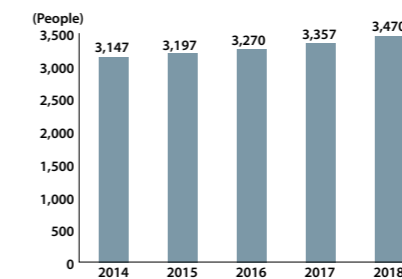
Sales over Time (Non-consolidated)



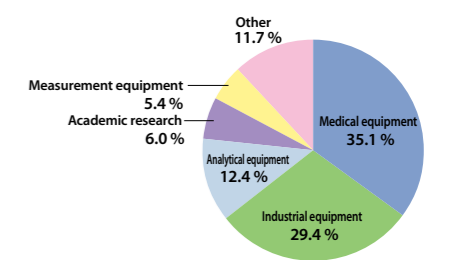
Sales (Consolidated) by Region



Number of Employees (Non-consolidated)



Sales (Consolidated) by Business Area



Editorial Policy

Time Period Covered	Fiscal year 2018: From Oct. 1, 2017, to Sep. 30, 2018
Organization	Hamamatsu Photonics K.K. (Non-consolidated)
Environmental Performance Data	11 business facilities (Toyooka Factory, Tenno Glass Works, Main Factory, Mitsue Factory, Shingai Factory, Joko Factory, Miyakoda Factory, Central Research Laboratory, Industries Development Center, Tsukuba Research Center, and Headquarters) and 5 sales offices (Tokyo Sales Office, Osaka Sales Office, Sendai Sales Office, Tsukuba Sales Office, and Nishinohon Sales Office)
Reference Guidelines	2012 Environmental Report Guidelines
Subject Matter	Environmental aspect, Social aspect
Publication	February 2019

Webpage



We provide the latest information about our environmental efforts on our Website.

[Our Company > Corporate social responsibility](#)

HAMAMATSU PHOTONICS K.K. www.hamamatsu.com

[CONTACT] Environment Committee Secretariats

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