

# Examples of Nikon's Environmentally Friendly Products

Nikon implements a policy of continuous and substantial improvement in the environmental performance of its products, which it achieves using a unique system for managing eco-friendly designs. Some of the many environment-friendly products manufactured by Nikon are introduced, by way of example, as follows.

## Precision Equipment Company Products

### ■ NSR-SF155 IC stepper (marketed from Dec. 2007)

This scan field stepper represents the cutting edge in i-line technology, with ultrahigh throughput achieved by the new Sky-hook structure platform, increased wafer stage speed, and improved chamber temperature stability.

Nikon has taken every care to make this product environmentally friendly, designing the optical systems with Eco-glass as far as is possible, and adopting circuit boards fabricated with lead-free solder.



NSR-SF155 IC stepper

- Energy efficiency** 52% higher than the NSR-SF140 in exposure of a 300 mm wafer (according to Nikon calculation criteria)
- Ozone layer protection** New HFC refrigerant with zero ODP (Ozone Depletion Potential) used for temperature control and air conditioning chillers
- Lead-free solder** 97.8% of newly designed circuit boards use lead-free solder
- Elimination of hexavalent chromium** Use of hexavalent chromium has been eliminated in surface treatment process of the components specified in drawings
- Eco-glass usage** 87%

Nikon's IC steppers & scanners usher in an era of ultrahigh-density integrated circuits, greatly contributing to sustainable improvements in resource efficiency.

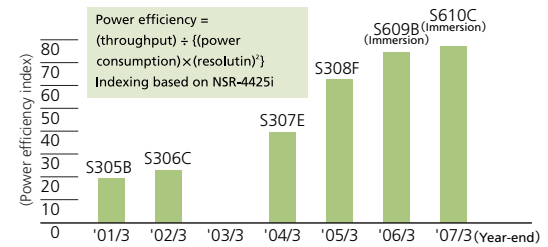
### Increasing energy efficiency of NSR Series IC steppers & scanners

As a result on continued technological advances, Nikon's IC steppers and scanners are contributing to the development of the global semiconductor industry. The higher resolution of the projection optics systems enables finer IC patterns, larger wafer sizes are accommodated, and enhanced throughput has resulted in a giant leap in the number of IC cells that can be exposed within a given time.

Nikon has been enhancing its product lineup by bringing out advanced models incorporating i-line (mercury lamp,) KrF (krypton fluoride excimer laser,) and ArF (argon fluoride excimer laser) light sources for higher resolutions.

Nikon has been successful in its ongoing efforts to address the power consumption issues associated with the improved performance. As a result, these higher-performance models offer outstanding energy efficiency, enabling significant increases in the numbers of IC cells exposed per unit of power consumed.

### Increasing power efficiency of the ArF Series



## Imaging Company Products

### ■ D3 Digital SLR camera (launched: Nov. 2007)

Nikon's flagship digital SLR answers a wide range of sophisticated professional requirements. It offers a wealth of advanced features, including Nikon's first FX-format sensor with 12.1-megapixel resolution, ISO 200 to 6400 sensitivity for normal-setting photography, rapid-burst 9~11fps continuous shooting, Scene Recognition System, high-density 51-point AF system, and new picture control functions. The D3's performance and concept have both been highly praised: as well as being named Camera Grand Prix 2008 Camera of the Year by Japan's Camera Press Club, it came top in the Best Professional D-SLR category at the TIPA\* Awards 2008.

\* Technical Image Press Association, representing 30 camera/video magazines in 13 European countries.



D3 digital SLR camera

- Energy efficiency** 24% better than the D2Xs, despite offering greatly improved performance (takes up to 4,700 pictures on a single charge compared to 3,800 for the D2Xs, using the same Nikon battery, at room temperature, as tested under Nikon lab conditions)
- Extended product life** 100% better than the D2Xs (shutter release certified for 300,000 operations, compared to 150,000 for the D2Xs)
- Lead-free solder** All electronic circuit boards use lead-free solder
- Reduction of hazardous substances** Clears the RoHS Directive's baseline
- Eco-glass usage** 100%

### ■ D300 Digital SLR camera (launched: Nov. 2007)

The D300 is the flagship model for the DX format, which offers considerable improvements in picture quality, high-speed performance, and operating ease. Despite being an affordable intermediate-level camera, it offers such advanced features as a 12.3-megapixel image sensor, rapid-burst 6~8fps continuous shooting, 51-point AF system, Scene Recognition System, new picture control Settings, Self-cleaning Sensor Unit, and 100% frame coverage. It garnered the Camera of the Year 2007 award from the US magazine Popular Photography.



D300 digital SLR camera

Energy efficiency	67% better than the D200, despite offering greatly improved performance (takes up to 3,000 pictures on a single charge compared to 1,800 for the D200, using the same Nikon battery, at room temperature, as tested under Nikon lab conditions)
Extended product life	50% better than the D200 (shutter release certified for 150,000 operations, compared to 100,000 for the D200)
Lead-free solder	All electronic circuit boards use lead-free solder
Reduction of hazardous substances	Clears the RoHS Directive's baseline
Eco-glass usage	100%

### ■ COOLPIX S600 Digital camera (launched: Mar. 2008)

This compact digital still camera boasts the world's smallest dimensions and fastest start-up time in its class. It also features a 28mm wide-angle capability, 4x optical zoom, 10-megapixel CCD, large 2.7-inch LCD monitor, and stainless steel body.

Despite being attractively priced, the S600 is equipped with numerous convenient functions, such as Face-priority AF 2.0, ISO 3200 High-Sensitivity mode, and Active Child Mode for automatic tracking and focusing on a moving subject.



COOLPIX S600 digital camera

Energy efficiency	40% better than the COOLPIX P4, even with higher performance
Lead-free solder	All electronic circuit boards use lead-free solder
Reduction of hazardous substances	Clears the RoHS Directive's baseline
Eco-glass usage	100%

### ■ COOLPIX S550 Digital camera (launched: Mar. 2008)

With a 5x optical zoom, 10-megapixel CCD, large 2.5-inch LCD monitor, and aluminum alloy body, this compact digital still camera is the world's smallest in its class. The Functions in this attractively priced device include e-VR electronic image stabilization, Face-priority AF 2.0, ISO 2000 High-sensitivity mode, and Smile Mode for automatically releasing the shutter when the subject smiles.



COOLPIX S550 digital camera

Energy efficiency	60% better than the COOLPIX P4, even with higher performance
Lead-free solder	All electronic circuit boards use lead-free solder
Reduction of hazardous substances	Clears the RoHS Directive's baseline
Eco-glass usage	100%

### ■ AF-S DX Zoom-Nikkor 16-85 mm f/3.5-5.6G ED VR interchangeable lens (launched: Feb. 2008)

Featuring a wide-angle focal length of 16mm for excellent performance, this standard zoom lens is suited for expert wide-angle photography. Compact and lightweight, it is easy to carry. It also features a VR function and ultrasonic motor to realize industry-leading image stabilization (enabling shooting at shutter speeds up to 4 stops slower) and autofocus operation that is both swift and silent. An ideal choice for carefree shooting.



AF-S DX Zoom-Nikkor 16-85 mm f/3.5-5.6G ED VR interchangeable lens

Reduced mass	16% mass reduction (575g → 485g) compared with the AF-S Zoom-Nikkor 24-120mm f/3.5-5.6G ED VR (IF)
Product assessment	High (77 points)
Lead-free solder	All electronic circuit boards use lead-free solder
Reduction of hazardous substances	Clears the RoHS Directive's baseline
Eco-glass usage	100%

# Examples of Nikon's Environmentally Friendly Products

## Instruments Company Products

### ■ C-LEDS LED stand for Stereoscopic Microscopes (launched: Dec. 2007)

This focus stand for use with Nikon's SMZ1000, SMZ800, and SMZ645 Stereoscopic Microscopes features its own light source to allow observation of specimens via transillumination or with reflected light.

Because it is equipped with an LED light source, this stand offers bright illumination that is perfectly uniform right up to the edges of the visual field, and yet it consumes very little power. And since it generates very little heat, it can be used for observing temperature-sensitive microorganisms and crystalline materials.

Despite its built-in light source, the base is just 26mm thick. Robust and compact, this stand is also lightweight and almost maintenance-free as lamp replacement is virtually never necessary.



C-LEDS LED stands for Stereoscopic Microscopes

- Energy efficiency** 375% better (19W→4W) for transillumination, 885% better (13.8W→1.4W) for reflected illumination
- Extended product life** Light source life extended by 100 times for transillumination, 50 times for reflected illumination
- Reduced mass** 47% mass reduction (transillumination: 6570g; reflected illumination: 1740g; total 8310g → 4400g)\*  
\* Compared with the C-DS DIA stand with lamp housing & transformer (for transillumination) and G-LS epi-illumination-device with transformer (for reflected illumination)
- Lead-free solder** All electronic circuit boards use lead-free solder
- Reduction of hazardous substances** Large reduction in hexavalent chromium used in surface treatment; no PBB, PBDE or PVC

## Nikon Group Products

### ■ Laser 350G laser rangefinder (launched: Dec. 2007)

The affordable laser rangefinder is small, lightweight, and easy to use. It can be used equally by golfers and by those engaged in forestry or fishing applications.

In addition to its proprietary First Target Priority Mode, the 350G makes use of a continuous measurement mode to enable easy targeting even with slight hand movement.



Laser 350G laser rangefinder

- Reduced mass** 14% mass reduction (210g →180g) compared with Laser 500G
- Extended product life** Filled with nitrogen gas for dependable waterproofing, bearing in mind that intrusion of rainwater would lower the product value
- Common use of components** Sharing approx. 92%\*  
\* Of the parts used in the Laser 550A S and other existing components
- Lead-free solder** All electronic circuit boards use lead-free solder
- Reduction of hazardous substances** Clears Nikon Green Procurement Standards & the RoHS Directive's baseline
- Eco-glass usage** 100%

### Column

#### Nikon Participates in Eco-Products 2007

For three days, December 13-15, "Eco Products 2007 – Eco Style Fair" – was held at Tokyo Big Sight exhibition center in Ariake. Nikon displayed what the in-house companies and Group companies are doing for the environment, with the Environmental and Technical Administration Department playing a central role. The theme chosen was "Light and ecology—Earth-friendly manufacturing based on light". A stage was set up and members of the audience were invited to participate in such hands-on attractions as nature observation using Nikon's Fieldmicroscope Series "EZ-Micro" and quizzes. The Nikon booth attracted great attention from the steady stream of visitors. In all 164,000 people visited Eco Products 2007.

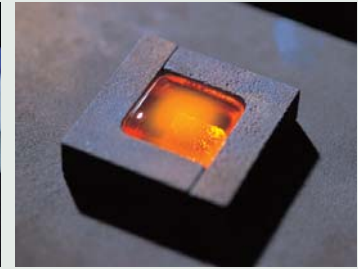
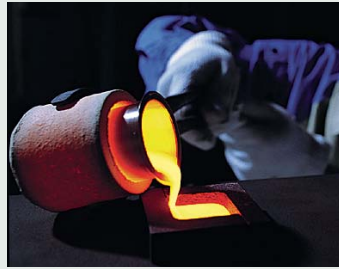


Children peer into Fieldmicroscopes.

## Environmentally Sound Optical Glass (Eco-glass)

Eco-glass is free from lead and arsenic.

In order to minimize the risk of environmental pollution posed by the presence of lead and arsenic in optical glass throughout the entire product life cycle, Nikon has developed Eco-glass for use in the optical systems of all its products.



Eco-glass in the laboratory

### History of Eco-glass development

Ever since Nikon was established in 1917 as the first optical glass manufacturer in Japan, the company has placed a high priority on the development and manufacture of optical glass designed for use in optical equipment.

As an early step in its antipollution efforts, in the 1970s Nikon eliminated cadmium, a toxic material, from its optical glass. In the 1990s, it investigated countless optical glass compositions, bearing in mind the possible effects of each on the environment. Of about 100 types of optical glass, most contained lead or arsenic. It was realized that this represented an important environmental issue for Nikon's business activities and products. The development of Eco-glass, completely free from these hazardous substances, and its wide use in Nikon products therefore became a key component in the company's environmental policy.

Nikon required that the new glass offer optical performance at least as good as that of the glass already in use. As such, the Optical Glass Development Department and the Optical Design Department worked closely together to develop new glass compositions that would satisfy design requirements. Following completion of the development phase, and with a supply system now in place, Nikon began a phased introduction of Eco-glass in its products. From the year ended March 31, 1999, this new glass has been used exclusively by the Optical Design Department. And from the second half of the year ended March 31, 2005, all Imaging Company products, such as cameras, use 100% Eco-glass.

With the cooperation of Nikon's Glass Manufacturing Department (Glass Division) and Hikari Glass Co., Ltd., the Nikon Group is now aggressively promoting the use of Eco-glass in manufacturing. As a result, in the year ended March 31, 2008, 98.5% of all glass shipped by Nikon – totaling over 1,500 tons, including shipments to non-affiliated companies – was Eco-glass.

Nikon offers a very extensive range of optical equipment, and because of this sheer diversity, some products incorporate parts that may not accommodate Eco-glass. Nevertheless, Nikon is committed to pushing the envelope of technological innovation in order to find ways to use Eco-glass throughout all its product categories.

#### Eco-glass Development Milestones

March 31, 1996	Full-scale Eco-glass development project launched
March 31, 1998	Eco-glass items added to Nikon product assessments
March 31, 1999	Eco-glass database completed; employed exclusively in optical design
March 31, 2000	Development of Eco-glass composition 80% complete
March 31, 2001	Development of Eco-glass composition completed

Note: The total cost of R&D to develop Eco-glass was ¥410 million over this period

### Eco-glass utilization in new optical designs

Unit: %

Fiscal year (end)	All product categories	Consumer products (cameras, binoculars, etc.)	Industrial products (IC steppers, microscopes, etc.)
March 31, 2000	77.1	—	—
March 31, 2001	86.1	—	—
March 31, 2002	78.1	—	—
March 31, 2003	92.2	—	—
March 31, 2004	94.7	96.6	94.5
March 31, 2005	95.8	100	95.5
March 31, 2006	96.8	100	96.5
March 31, 2007	98.0	100	97.6
March 31, 2008	99.4	100	99.4

Note: Figures are based on the number of parts.

### Eco-glass shipments from glass manufacturing departments

Fiscal year (end)	Utilization	Scope of data
March 31, 2001	53.6%	Nikon's Glass Manufacturing Department
March 31, 2002	75.8%	
March 31, 2003	83.5%	
March 31, 2004	87.4% ( 839/960 t )	Nikon's Glass Manufacturing Department & Hikari Glass
March 31, 2005	91.7% ( 989/1,079 t )	
March 31, 2006	93.0% ( 777.4/836.1 t )	
March 31, 2007	98.0% ( 940.1/959.3 t )	
March 31, 2008	98.5% ( 1,535,914/1,559,260 t )	

Note: Figures are based on the total mass of shipments.



# Environmental Management

Nikon is committed to evolving as an enterprise that is in harmony with the environment, contributing through all of its business activities to the creation of a recycling-oriented society. The company seeks to spread its Basic Environmental Management Policy throughout the Nikon Group and to promote effective environmental protection based on its Environmental Management System.

## The Nikon Basic Environmental Management Policy

### ■ Purpose of the policy

Nikon formulated the Nikon Basic Environmental Management Policy in 1992 to act as the foundation for its environmental management activities. Nikon believes that pollution prevention and the efficient use of resources are vital in order to be able to hand on to the next generation a healthy environment that is capable of supporting the con-

tinued development of society. In the year ended March 31, 2002, this policy underwent a major revision in response to the anticipated needs of the coming recycling-oriented society. An outline of our action guidelines is presented below.

### Action Guidelines

- 1 We will make every effort to promote waste reduction, reuse and recycling, while encouraging energy and resource conservation, waste reduction and conscientious waste processing, with the goal of creating an environment-conscious recycling society.
- 2 We will perform environmental and safety reviews at every stage of planning, development and design, in order to provide products that fully comply with environmental protection aims.
- 3 At every stage of production, distribution, use and disposal, we will actively introduce materials and equipment that are effective in protecting the environment, strive to develop and improve technologies in this area, and work to minimize environmental burdens.
- 4 We will meet targets for reduction of environmental burdens and use of harmful substances, and continue to improve our environmental management system through environmental audits and other means.
- 5 We will develop and follow a rigorous code of standards, in addition to observing all environmental conservation treaties, national and regional laws and regulations.
- 6 We will conduct ongoing education programs to further employee knowledge of environmental issues and promote employee involvement in environmental activities.
- 7 We will provide suppliers with guidance and information to promote optimal environmental protection activities.
- 8 We will participate actively in the environmental protection programs of society at large, and implement information disclosure.

## Environmental Burden of Business Activities

Nikon Group's principal environmental loading (for year ended March 31, 2008)

INPUT		Nikon	Subsidiaries	Unit
Energy	Electricity	179,558	85,320	Mwh
	Gas	6,478	3,315	(thousand) m <sup>3</sup>
	Heavy oil	314	1,298	kl
	Water	1,321	659	(thousand) m <sup>3</sup>
PRTR substances	Dichloropentafluoropropane	0	2.489	t
	Xylene	0	2.326	t
	Toluene	1.049	2.822	t
	Lead and lead compounds	3.370	0	t
	Nickel compounds	0	0.633	t
	Boron and boron compounds	1.694	0	t

OUTPUT		Nikon	Subsidiaries	Unit
CO <sub>2</sub> exhaust	Electricity	60,106	29,610	t-CO <sub>2</sub>
	Gas	13,664	15,404	t-CO <sub>2</sub>
	Heavy oil	851	3,518	t-CO <sub>2</sub>
PRTR substances emissions	Dichloropentafluoropropane	0	2.376	t
	Xylene	0	1.396	t
	Toluene	0.787	1.693	t
	Lead and lead compounds	0.002	0	t
	Nickel compounds	0	0	t
	Boron and boron compounds	0.002	0	t
Disposal	Amount of waste generated	3,152	1,801	t
	Amount recycled	3,062	1,635	t
	Amount of landfill	16	9	t

Scope of Data

Nikon Plants: Ohi, Yokohama, Sagami-hara, Kumagaya and Mito

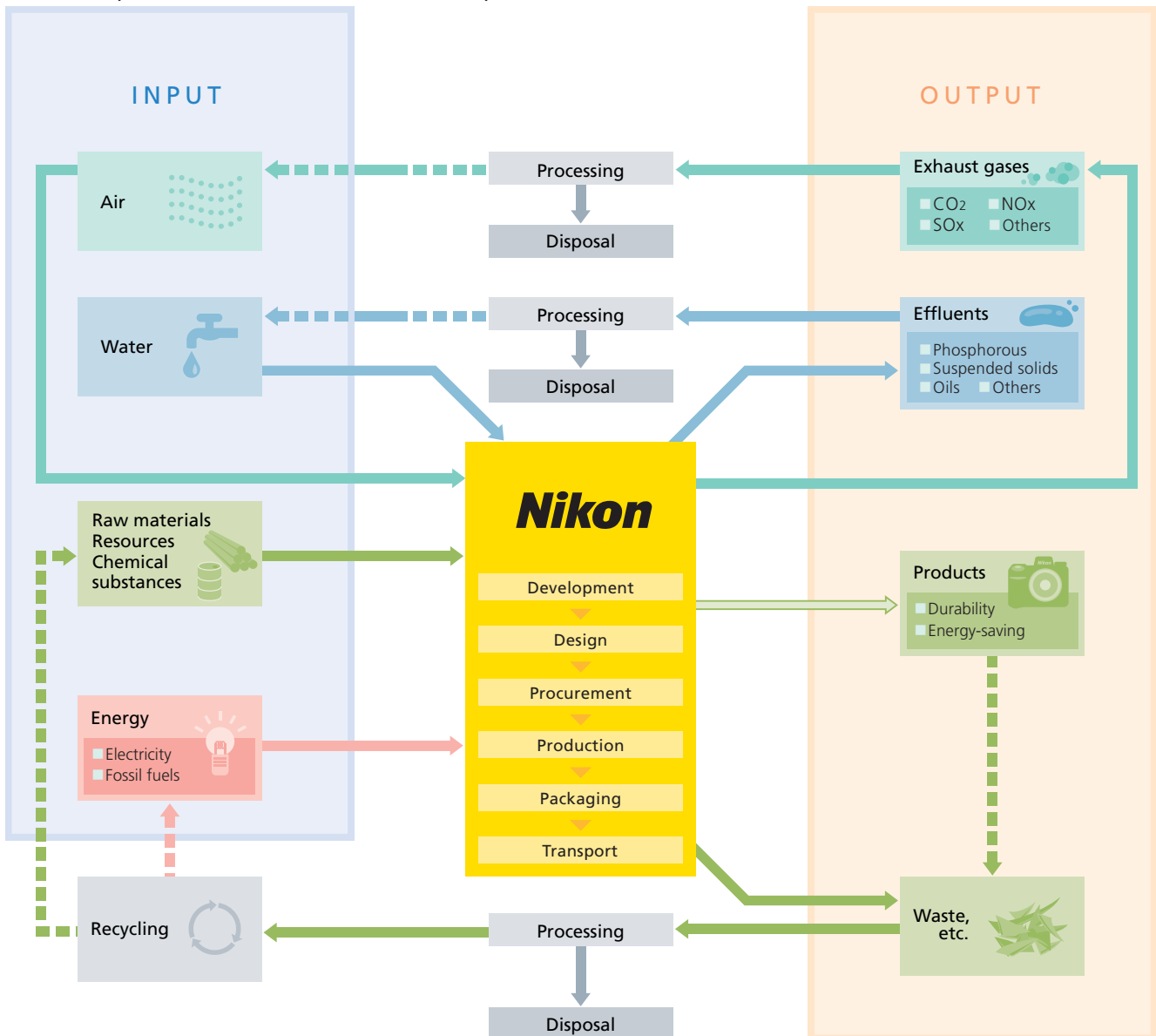
Manufacturing Subsidiaries: Tochigi Nikon, Tochigi Nikon Precision, Mito Nikon Precision, Sendai Nikon, Sendai Nikon Precision, Zao Nikon, and Kurobane Nikon (In this report these 7 subsidiaries are referred to the "major manufacturing subsidiaries in Japan.")

A corporation is like a living organism, functioning within the global environment. As it grows, it provides products and services to society and continues to grow, and during this time it consumes various resources and energy, and generates numerous types of waste.

The goal now is to work toward a recycling-oriented society, conserving energy and resources, and reducing our waste output until it has been virtually eliminated. It is imperative that corporations be aware of the impact their operations may be having on the environment, and implement more sophisticated ecological management programs.

Nikon is continuing its steady efforts to reduce waste materials, and also actively pursuing unique activities such as the development of Eco-glass, which will significantly reduce environmental loading. Special emphasis is being given to implementing measures to reduce CO<sub>2</sub> emissions and prevent soil contamination. Nikon operates based on its corporate philosophy of "Trustworthiness & Creativity," and today it is applying the experience and technology gained through decades of work in the field to form a new, environmentally harmonious corporation.

### Relationship with the Environment in Business Operations



# Environmental Management

## Environmental Management System

**■ Environmental management organization**  
 Nikon first started its environmental protection activities in 1970, when it formed its "First Pollution Response Committee." This committee was renamed the "Pollution Prevention Committee" in 1971, and again in 1973, becoming the "Environmental Improvement Committee." This gave birth to a program of more practical environmental protection activities. The environmental management organization was restructured in 1992 with the enactment of the Nikon Basic Environmental Management Policy, and in 1999, as part of the expansion of and adjustments to the organization, the company established an Environmental Administration Department (changed to Environmental & Technical Administration Department in 2002). The current environmental management organization ensures that Nikon is constantly kept abreast of new Japanese or international laws, treaties or regulations, or modifications to existing ones, as well as the ever-changing needs of society.

Environmental Management Organization (as of April 1, 2008)



## ■ Utilization of ISO 14001 certification

### Main achievements for the year ended March 31, 2008

- Integrated certification acquired by Nikon Instech Co., Ltd., Hikari Glass Co., Ltd., Nikon Vision Co., Ltd., Nikon Imaging (China) Co., Ltd., and Nikon (Thailand) Co., Ltd.

### Goal for the year ending March 31, 2009

- Introduce Nikon Environmental Management Simplified System for business with little environmental loading.

In 2007, Nikon Instech Co., Ltd. became the first non-manufacturing subsidiary in the Nikon Group to acquire integrated certification. Moreover, two overseas manufacturing subsidiaries – Nikon Imaging (China) Co., Ltd., and Nikon (Thailand) Co., Ltd. – completed integrated certification. Nikon has thus been pushing ahead with full implementation of the Environmental Action Plan and ensuring greater efficiency of its business operations.

In the year ending March 31, 2009, the Nikon Environmental Management Simplified System will be introduced for business units, in Japan and abroad, with relatively little environmental loading; this comprises the major components of ISO 14001. In this way it is planned to ensure that Nikon's environmental management takes root throughout the Group.



Surveillance assessment for Hikari Glass, a Nikon Group manufacturing subsidiary

## Column

### Overseas Subsidiary Proactively Vets Industrial Waste Disposal Contractors

Nikon Imaging (China) Co., Ltd. carries out on-site inspections of the companies with which it has contracted for the processing of industrial waste. By conducting surveys – checking on whether the relevant legal permits have been obtained, whether the waste is being dealt with in the proper manner, etc. – it strives to ensure that it only deals with reliable companies.



Business permit for waste disposal

## Environmental Education & Awareness Activities

### Main achievements for the year ended March 31, 2008

- Exhibited at Eco-Products 2007. (See page 43 for further information.)
- Conducted seminar on global warming as part of the CSR seminars run at 11 domestic Group companies.
- Conducted EMS educational activities to coincide with the integration of Group Environmental Management Systems (EMS).

### Goals for the year ending March 31, 2009

- Make use of e-learning; devise a more efficient & effective system for wide-range training of regular employees.

In order to initiate, maintain and develop environmental protection activities in the whole Group, Nikon considers it essential to improve awareness amongst all employees; to ensure a clear understanding of relevant manuals, regulations, and procedures; and to ensure that the necessary specialist knowledge and skills are acquired by staff.

Nikon provides the following environmental educational programs and awareness activities for all its employees, for Group companies, and also for some business partners.

### Support for obtaining ISO certification

- Provision of education and support for obtaining ISO 14001 & ISO 9001 certification for companies within and outside the Nikon Group.

### Promotion of environmental management & measures

- Educational programs tailored for the entire Group, each business unit, each department, etc.

### Various awareness activities

- Supplying information, informing employees of new policies and enhancing awareness of environmental matters, as well as ensuring adherence to standards for waste-separation.

### Specialized environmental education

- Acquisition & passing on of specialized knowledge, skills and technical abilities necessary to carry out individual responsibilities related to environment management.

### ■ Engaging Group companies

Environmental education is also offered to Group companies in the form of seminars, etc. As part of the CSR seminars organized for the 11 Group companies in Japan, the issue of global warming has been given special emphasis, with explanations of current projects being undertaken to prevent global warming, as well as the approach and measures adopted by Nikon to tackle this urgent problem facing the world community. Staff have thus gained a better understanding and heightened awareness of global warming.

Also, to coincide with EMS integration for Group companies, EMS and related education has been implemented to contribute to creating a system that enables tightly coordinated activities within the Group.

### Main awareness activities within Japan

- Publication and website posting of CSR Report (and Environmental Report)
- Disclosure of environment-related information on the environmental management intranet site
- Publication and distribution of Environment/Product Safety Information for Nikon Group companies
- Publication of environment-related articles in the in-house magazine *Kōyū Tsūshin* and on the website
- Publication and distribution of EMS News (Yokohama Plant)
- Invitations to submit environment-oriented proposals, slogans, posters, etc. for review and commendation
- Environment Month (June) featuring broadcasts by the Environmental Committee Chairman, Environment Month seminars, environmental facility tours, environmental photo contest, etc.
- Energy-saving Month (February & August) with energy-saving patrols
- Clear notification of all waste-separation categories and provision of waste-disposal areas that encourage recycling
- Notice boards within the workplace, displaying such information as environmental objectives, targets, and management programs
- Publication of site reports
- Participation in various environmental events

### Main educational activities within Japan (environmental education tailored to each level in the organization & workplace)

- Executive management education (general environmental management, ISO 14001, management responsibilities, etc.)
- Education of new employees (general environmental awareness, Nikon's environmental activities)
- Environmental seminars for Nikon Group companies (general environmental management, ISO 14001, green procurement, etc.)
- Education of EMS representatives (environmental policy, environmental objectives, environmental manuals/regulations/procedures, environmental evaluation procedures, etc.)
- Daily on-the-job education (general environmental management, environmental manuals/regulations/procedures, environmental targets, separation of waste and recycling, energy saving, paper and resources saving, etc.)
- Nikon Environmental Action Plan presentations
- Green procurement education

### Specialized environmental education

- Internal environmental auditor development course
- Step-up seminar for internal environmental auditors
- Control of chemical substances (handling procedures, PRTR, etc.)
- Environmental facilities operation management
- Specialized industrial waste management qualification course
- Energy management course
- Pollution prevention management course
- Course for persons in charge of handling dangerous substances
- Emergency countermeasures (accidental leak simulation)

### Column

#### Nikon Environment Symbol Mark

The Nikon Group established the symbol mark of environmental conservation and improvement activities in 1998.





# Environmental Management

## Environmental Action Plan

Each year Nikon evaluates its performance against the Environmental Targets that had been set for the previous fiscal year. This enables it to identify issues that need to be addressed in the following year. In addition to formulating the next Environmental Targets, every year the Environmental Committee decides on a new Nikon Environmental Action Plan, a 3-year plan for the environmental activities that is reviewed and renewed annually.

The table below details the Nikon Environmental Action Plan 2007 (3-year plan), listing the Environmental Targets set for the year ended March 31, 2008 (first year of the plan). To the right of each target can be found the achievements for the year and Nikon's self-evaluation.

### Nikon Environmental Action Plan 2007

	Theme	Environmental targets for the year ended March 31, 2008	Results for the year ended March 31, 2008	Evaluation	See page
Product environment	Energy conservation (prevention of global warming)	[Energy efficiency] • 30% or more improvement in overall energy efficiency of new products released between the years ending March 31, 2009-2011, compared to similar existing products	More than 57% (93%) improvement in simple average improvement of models, 30% or more improvement for 67% of models (all models)	○	41~43
	Reduction in use of hazardous chemical substances, etc.	[Eco-glass usage] • Maintain 100% use of Eco-glass in new optical designs for consumer products and at least 98% for industrial products; at least 97% (by mass) of material shipped by optical glass division	Consumer products: 100% (100%) / Industrial products: 99.4% (97.6%) / Materials shipped: 98.5% (98.0%)	○	44
		[Lead-free solder] • 100% for all new electronic circuit boards for small products (cameras, microscopes, surveying instruments, etc.), and at least 90% for large products (steppers, scanners, etc.), both targets to be met from year ending March 31, 2008, onwards	Small products: 100% (100%) Large products: 97% (96%)	○	52
		[Hexavalent chromium, lead, cadmium, mercury, PBB, PBDE, PVC] • Continue compliance with RoHS Directive; maintain & improve management system • Significantly reduce use of hexavalent chromium in surface-treatment processes	Achieved continued compliance, maintained & improved management system (Establish system) Achieved significant reduction	○ ○	
	[Ozone layer-depleting substances] • Reduction of IC and LCD steppers using HCFC as a refrigerant to 5% or less of all products	2.1% (9.2%)	○	41	
Green procurement	[Reduction in use of hazardous chemical substances] • Maintain & update green procurement in consumer fields, gauge use for major products in industrial field [Application of Nikon Green Procurement Standards] • Ensure full understanding of Nikon Green Procurement Standards; continue application • Create system for concluding agreements with all suppliers; survey & audit environmental conservation systems	Continued in consumer fields; gauged use for major products in industrial field Publicized Nikon Green Procurement Standards; produced 3rd version System established & running	○ ○ ○	35~36	
Distribution	[Reduction of CO <sub>2</sub> emissions in domestic physical distribution] • Reduce CO <sub>2</sub> emissions per net sales by 5% or more compared to year ending March 31, 2007	16.6% reduction (Start process of gauging emissions)	○	54	
Workplace environment	Energy conservation (prevention of global warming)	[Reduction in greenhouse gas (energy-based CO <sub>2</sub> ) emissions] Greenhouse gas emissions (CO <sub>2</sub> equivalent) from 12 business establishments in Japan, 2 overseas • Reduce by 9% or more per net sales compared to year ending March 31, 2006 • 199,000 tons* or less of CO <sub>2</sub>	16% reduction 207,000 tons or less of CO <sub>2</sub>	○ ×	55
	Waste reduction	[Zero-emission system] • Prepare to establish zero-emission system at 2 overseas business establishments [Reduction of mass-volume waste such as paper, sludge, effluent, metal and glass] • Feasibility study for 12 business establishments in Japan, 2 overseas	Preparations to establish zero-emission system almost complete Feasibility study complete, policy decided	△ ○	56
	Reduction in use of hazardous chemical substances	[Chlorinated organic solvents] • Reduce by 25% (compared to year ending March 31, 2006) at 2 overseas business establishments	No reduction	×	57
Others	Environmental Management System (EMS)	[ISO 14001 integrated certification] • Integrate EMS at 7 business establishments in Japan, 2 overseas	Completed integration at 7 business establishments in Japan, 2 overseas; simplified system introduced (completed at 5 major manufacturing subsidiaries in Japan)	○	47
	Life Cycle Assessment (LCA)	[Introduction of LCA] • Prepare to introduce LCA	LCA introduction policy decided	○	51~52

Notes: In the column headed "Results for the year ended March 31, 2008," the data in parentheses are results through the year ended March 31, 2007.

The symbol "○" indicates adequate progress; "△" means that some progress was made; and "×" represents a significant gap between the target and actual performance. (Nikon's self-evaluation)

\* In the 2007 CSR Report, "170,000 tons of CO<sub>2</sub>" appears, but this has since been recalculated using the relevant emission indices for each region and country.

### ■ Year ended March 31, 2008 (results)

In October 2007, Nikon established the Global Warming Prevention Project and initiated full-scale activities to help prevent global warming, now recognized as an issue of urgent concern worldwide. (▶ See page 13 for further information.)

As can be seen with Europe's REACH, Nikon expects that regulations and demands for stricter control of the chemical substances in products will become more widespread, and it has been making preparations in anticipation of such developments.

### ■ Year ending March 31, 2009 (targets)

In the year ending March 31, 2009, all members of the Nikon Group will join forces to accelerate measures to reduce greenhouse gas emissions, etc., so as to meet the set targets. These efforts will center on the Global Warming Prevention Project. To realize tightly coordinated environmental activities system, integration of Group EMS (Environmental Management Systems) – started in the year ended March 31, 2005 – will be completed.

### Nikon Environmental Action Plan 2008

	Theme	Mid-term environmental targets	Targets for the year ending March 31, 2009
Product environment	Energy conservation (prevention of global warming)	[Energy efficiency] • 30% or more improvement in overall energy efficiency of new products released between the years ending March 31, 2009-2011, compared to similar existing products	30% of more improvement
	Reduction in use of hazardous chemical substances, etc.	[Eco-glass usage] • Maintain 100% use of Eco-glass in new optical designs for consumer products and at least 98% for industrial products; at least 98% (by mass) of material shipped by optical glass division	Consumer products: 100% Industrial products: 98% or more Materials shipped: 98% or more
		[Lead-free solder] • 100% for all new electronic circuit boards for small products (cameras, microscopes, surveying instruments, etc.), and at least 90% for large products (steppers, scanners, etc.)	Small products: 100% Large products: 90% or more
		[Hexavalent chromium, lead, cadmium, mercury, PBB, PBDE, PVC] • Continue compliance with RoHS Directive; maintain & improve management system • Ensure thorough process control for hexavalent chromium surface-treatment processes in consumer fields; continue total elimination policy for newly designed components in the industrial field	Continue compliance; maintain & improve management system Establish control standards for use; eliminate from newly designed components in the industrial field
		[Ozone layer-depleting substances] • Continue to eliminate HCFC as refrigerant in all IC/LCD steppers & scanners shipped from year ending March 31, 2009	Totally eliminate HCFC
	Control of chemical substances	[Control of chemical substances in products] • Create & operate management system	Decide policy, prepare management system
	Green procurement	[Reduction in use of hazardous chemical substances] • Maintain & update green procurement in consumer fields, expand use in industrial field [Application of Nikon Green Procurement Standards (procured goods)] • Maintain & update application of Nikon Green Procurement Standards • Continue survey & audit of environmental conservation systems	Maintain & update green procurement in consumer fields, expand use in industrial field Maintain & update application of Nikon Green Procurement Standards Make surveys & audits of environmental conservation systems permanent
Distribution	[Reduction of CO <sub>2</sub> emissions in domestic physical distribution] • Reduce CO <sub>2</sub> emissions per net sales by 19% or more compared to year ending March 31, 2007	Reduction of 8% or more	
Workplace environment	Energy conservation (prevention of global warming)	[Reduction in greenhouse gas (energy-based CO <sub>2</sub> ) emissions] • Reduce total CO <sub>2</sub> emissions by Nikon and manufacturing subsidiaries in Japan to 126,000 tons or less (93% compared to year ending March 31, 2006) • Reduce emissions by 15% per net sales (compared to year ending March 31, 2006) at 2 Asian manufacturing subsidiaries (total emissions: 87,000 tons of CO <sub>2</sub> )	Total emissions of 131,000 tons or less (96% compared to year ended March 31, 2006) Reduce emissions by 5% per net sales (total emissions: 80,000 tons of CO <sub>2</sub> )
	Waste reduction	[Zero-emission system] • Maintain system at Nikon and major manufacturing subsidiaries in Japan; establish system at 2 Asian manufacturing subsidiaries [Reduction of mass-volume waste] • Achieve 30% reduction (compared to year ending March 31, 2006) at 12 business establishments in Japan, 2 Asian manufacturing subsidiaries	Feasibility study for establishing system at 2 Asian manufacturing subsidiaries Reduction of 10%
Others	Environmental Management System (EMS)	[ISO 14001 integrated certification] • Expand/maintain integrated certification	Expand number of integrated certification business establishments
	Life Cycle Assessment (LCA)	[Gauge environmental burden using LCA] • Start developing goals	Formulate LCA procedures

Note: Mid-term environmental targets are for the year ending March 31, 2011, unless specified otherwise.

# Product-related Activities

From initial planning through to the final stages of the product life cycle, all Nikon products are designed with consideration for the environment. This is achieved by implementing the Nikon Product Assessment System to development and design for all product categories, and also by facilitating the reuse and recycling of used products. Nikon is also working to reduce the burden on the environment by improving packaging and physical distribution.

## Eco-friendly Product Development

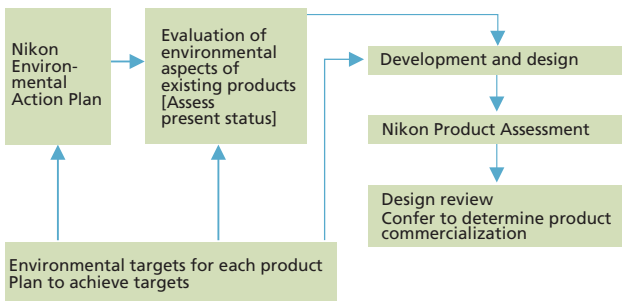
**Environment-friendly Product Development System**  
Nikon has independently developed and implemented a system for managing environment-friendly product designs. To facilitate its operation, the company has continuously reviewed and revised the Nikon Environmental Action Plan and the Nikon Product Assessment System.

Under this system, both Nikon's in-house companies and Nikon Group companies are developing more environmentally conscious products with a commitment to improving energy efficiency significantly, conserving global resources, the minimal use of hazardous substances, and the maximum application of Eco-glass, lead-free solder, and plating techniques that are free from hexavalent-chromium.

By March 2006, Nikon had completed preparations to comply with the EU's RoHS Directive\* that came into effect four months later, in July 2006.

\* RoHS Directive: Applies to an extensive range of electrical and electronic products sold in Europe, excluding certain materials and products which have no substitutes. In principle, the Directive prohibits the sale of products containing hexavalent chromium, lead, cadmium, mercury, PBB, and PBDE in European markets. The Directive has been enforced since July 2006.

### Management system flow for eco-friendly product design



### Product assessment

To minimize the adverse environmental effects of its products throughout their life cycles, Nikon formulated its own product assessment system in 1995. This quantifies eco-friendliness for products under development so they can be objectively assessed. Since 1995 the Nikon Product Assessment System has been applied in the development and design of all Nikon products, and resulting reductions in environmental loading have been significant.

Nikon is constantly adding new evaluation items and standards to significantly improve product assessment. In 2007, a revised system (version 8) was introduced with reinforced criteria related to hazardous substances. Nikon's product development and design departments have redou-

bled their efforts to achieve even higher scores under the latest assessment system.

#### Features of the Nikon Product Assessment System

- Places priority on reducing consumption of resources and energy, recycling, long product life, reduction in the use of hazardous substances, reduction and simplified processing of waste, and the disclosure of material information;
- Anticipates increasingly serious global environmental issues and new or revised regulations/rules, and leads to development of Nikon standards that take product characteristics into account;
- Based on thorough discussions among product development teams, material engineers and other related personnel;
- Makes product assessment mandatory in design reviews and related phases of product development, with procedures and standards clearly defined;
- Requires continuous improvement in assessment scores from one model to the next; and
- Supports designers by building and maintaining an environmental database of information related to materials (Eco-glass, plastics, metals, surface treatment materials, bonding agents, etc.), and by supplying explanatory documentation and references.

#### Items covered under the Nikon Product Assessment System

- Ongoing reductions in product mass, volume, and part counts
- Assessment and improvement of energy consumption based on Nikon's Energy Efficiency formula (product functionality/power consumed)
- Pursuit of extended product life and simpler repair procedures
- Reduction in the amount of waste generated from consumables; appropriate guidance on waste processing for customers
- Simplified recycling procedures (simpler separation of plastics from metals, content marking/explanation, and simpler removal of rechargeable batteries)
- Avoidance of the use of hazardous substances (heavy metals, designated brominated flame retardants, PVC) in metal or plastic components, wires, electronic components, etc.
- Use of optical glass free of lead and arsenic (see page 44)
- Use of lead-free solder on electronic circuit boards (see page 52)
- Adoption of surface-treatment technologies free of hexavalent chromium (see page 52)
- Elimination of ozone-layer-depleting substances
- Strict observance of environmental laws and regulations (battery regulations, RoHS Directive, etc.)
- Overall assessment (overall assessment score, comments on evaluation, etc.)

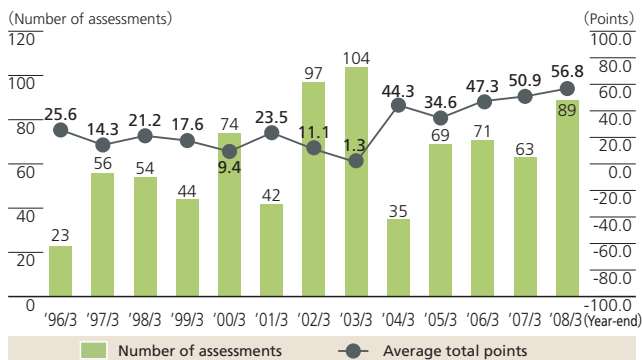
### Results of Nikon Product Assessment

If a product shows improved environmental friendliness compared with the prior model, assessment points are awarded. If the environmental friendliness is about the same, no points are given. If the environmental friendliness has deteriorated, points are subtracted. The point scale ranges from -100 to +100.

Over the 13 years from the year ended March 31, 1996 to the year ended March 31, 2008, Nikon performed 815 assessments under this program; products received a total score of +26.6 points on average. Over the last five years there has been a dramatic improvement, with the average score over that period reaching +47.6, in spite of the adoption of ever stricter assessment criteria.

As it launches a succession of new products on world markets, Nikon is continuing its efforts to improve and enhance functionality and performance in all of its product categories. These assessments confirm the great advances it is achieving in environmental friendliness.

### Product assessment results



### Reducing Hazardous Substances in Products

As part of Nikon’s approach to reducing the hazardous substances in its products by employing new or alternative technologies, it is making use of lead-free soldering and surface treatment technologies — such as a plating process that does not require hexavalent chromium — that are free from heavy metals. The company is also introducing chemical analysis techniques for use by the Quality Assurance Department.

#### ■ Full-scale adoption of lead-free solder

Under the direction of the electronic engineering departments at the Yokohama Plant and Sendai Nikon, Nikon has established a system for employing lead-free solder. This involves not only its own product development and manufacturing technology departments but also other Nikon Group companies and business partners.

Nikon’s in-house training and technical certification system for the training of staff in the techniques of manual soldering now includes a course on lead-free soldering procedures to help employees master the new technology. By the year ended March 31, 2008, over 700 instructors and qualified staff have been trained in lead-free soldering, both in Japan and at overseas production subsidiaries.

The main alternative to lead solder is a tin-silver-copper alloy, but in addition to this Nikon also uses a low-temperature tin-silver-indium-bismuth alloy, enabling the company to apply the optimum solder for a wide range of products.



Lead-free flow furnace



Image processing board for the A1 Series of confocal microscopes

### Application of lead-free solder to Nikon products

The use of lead-free solder is being implemented under the Environmental Action Plan (▶ see page 49). Progress has been rapid: in the year ended March 31, 2008, Nikon used 100% lead-free solder for the electronic circuit boards in all of its new consumer products, including the D3 digital SLR camera. The use of lead-free solder is also being aggressively promoted for our industrial products (steppers, microscopes, surveying instruments, etc.), and in the year ended March 31, 2008, 98% of all newly designed boards were soldered with lead-free materials

#### ■ Elimination of hexavalent chromium in surface treatment

Hexavalent chromium compounds are extremely hazardous, but have been extensively used in metal surface treatment for many years. The surface treatment departments of the Yokohama Plant renewed the technologies and processes used for chromate treatment and chrome plating earlier this decade. Through these efforts, the plant completely abolished the use of hexavalent chromium in December 2004.

Based on the expertise gained and results achieved at Yokohama, Nikon has actively introduced hexavalent-chromium-free surface treatment technologies in all product categories.

Owing to the many types of surface treatment used — including painting, plating and chemical conversion coating — on a wide range of components in a variety of working conditions, there are numerous difficult issues to be addressed. Nevertheless, Nikon has responded by establishing strict technical standards regarding not only hexavalent chromium, but also lead, cadmium, and mercury. The company’s goal is to abolish the use of heavy metals entirely.

#### ■ Chemical analysis techniques used by the Quality Assurance Dept.

The Nikon Group is taking steps to abolish the use of hazardous substances such as hexavalent chromium, lead, cadmium, mercury, PBB, PBDE and PVC in its products, as far as is technically possible. However, Nikon products include materials and components that have been sourced from countless producers and trading companies located in countries all over the world, representing a complex supply chain. Green procurement procedures help to ensure that hazardous chemical substances have not been introduced at any stage of the processing and assembly of parts that make up a finished product, but it is still necessary to confirm this by conducting chemical analysis in-house. (▶ See page 35 for further information.)

The Nikon Group has therefore introduced chemical analysis techniques to be carried out by the Quality Assurance Department at each major stage in the production process for products of all types. A large number of technicians have now acquired expertise in the use of analytical techniques and related know-how, and they are working hard to prevent hazardous substances contaminating Nikon products.

# Product-related Activities

## Reuse & Recycling of Used Products

Nikon, which supplies its products worldwide, is working tirelessly to reduce the total environmental impact of its products and services through the reuse and recycling of used products.

### ■ Sales of refurbished steppers

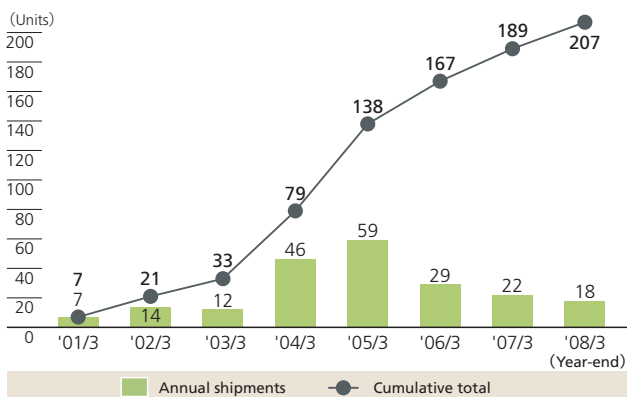
In the year ended March 31, 2001, Nikon launched a new service for collecting used steppers from customers, reconditioning them, replacing parts, reconfiguring them, and then installing them for new customers in Japan and overseas. This is an example of Nikon's willingness and capability to reuse its own products. It is also a business that reflects the corporate character: a practical demonstration of the company's conviction of the possibility of contributing to the environment and satisfying the customer at the same time. Nikon has been expanding and reinforcing this system, which it regards as an important business offering a stable revenue flow, in contrast to those new product businesses in which sales results can fluctuate widely.

Thirty-three steppers were shipped in the period from the year ended March 31, 2001 to the year ended March



The popular NSR-2205i 12D was initially marketed in 1996.

### Sales volume of Nikon refurbished steppers



31, 2003. This was followed by 46 steppers in the year ended March 31, 2004, and 59 steppers in the year ended March 31, 2005. Although there has been a slight fall in shipments since then, the cumulative total had reached 207 units by the end of the year ended March 31, 2008.

In order to increase the efficiency of the reconditioning and reconfiguring business, Nikon is making efforts to upgrade the tools and equipment, improve procedures, standardize workflow, increase efficiency, and put in place a framework for technical troubleshooting.

### ■ Battery recycling

Nikon and many other companies are cooperating with JBRC\* (Japan Battery Recycling Center) to collect and recycle rechargeable batteries for Nikon digital cameras and other products discarded by consumers.

\* JBRC: An incorporated intermediate corporation (with limited liability) that promotes recycling of compact rechargeable batteries in Japan based on the Law for Promotion of Effective Utilization of Resources.

### ■ Recycling of used Nikon products

Following the initiative provided by the EU's WEEE Directive\*, European countries are enacting laws and establishing systems for the collection and recycling of used products. Accordingly, Nikon's European subsidiaries, led by that in the Netherlands, have been preparing to accommodate the enforcement of such new laws and systems for the collection/recycling of digital cameras and other Nikon products as soon as such measures are introduced in each country.

By the year ended March 31, 2007, Nikon had established a collecting and recycling system in 20 countries in Europe including the Netherlands, Germany, Sweden, UK, France and Poland. Progress continues, and in the following year, Nikon signed up to participate in collection organizations in 5 other countries, including Italy and Lithuania.

The collection of recycling of Nikon products in the EU represents a considerable financial burden: in the year ended March 31, 2008, the estimated cost met by Nikon's local sales companies exceeded ¥17 million, and that does not include the smaller European markets, where it is difficult to make reliable estimates. However, the Nikon Group is aware of the importance of collecting and recycling used products, and it will continue to see that this issue is handled appropriately.

\* The WEEE Directive: A Directive on Waste Electrical and Electronic Equipment established by the EU, requiring manufacturers to collect and recycle used products in many categories of electrical and electronic equipment after August 2005.



EU recycling mark



## Measures for Packaging

Seeking reductions in product packaging, Nikon established its Environmental Policy Regarding Packaging Materials in May 1998, and revised it in June 2000.

Based on this policy, the Imaging Company is taking various steps to raise loading efficiency in distribution. For example, product package dimensions were formulated to maximize utilization of available airplane cargo space. The Company thereby reduced digital SLR camera box sizes by 20% in the year ended March 31, 2006. Work has now begun to reduce the bulk of instruction manuals, and as a result further reductions in packaging size are envisaged. Also, Nikon has switched from conventional containers to pallets, eliminating the need for outer packaging and thus reducing the volume of materials used in transport.

The Instruments Company has continued to make progress in improving safety and facilitating the separation of materials during unpacking or disassembly. It has adopted a type of insertion packaging that enables the cushioning material and cardboard box to be separated easily. Molded pulp is now used for the packing of some of products, promoting the use of recycled resources. In other ways too, the Company is working to make its packaging eco-friendly; for example, biodegradable material is employed for its new Fieldmicroscope Series "EZ-Micro".



Before improvement

After improvement

Reduction in size of digital SLR camera packaging

## Improving Physical Distribution in Japan

### Main achievements for the year ended March 31, 2008

- CO<sub>2</sub> emissions associated with Nikon's domestic physical distribution totaled 2,368 tons.
- Conducted courses in eco-friendly driving (for Nikon Business Services, a subsidiary that handles distribution for Nikon).
- Conducted environmental awareness activities for transport companies working for Nikon.

### Goals for the year ending March 31, 2009

- Introduce digital tachometers.
- Launch domestic survey aimed at increasing transport efficiency.
- Initiate survey to gain picture of physical distribution overseas.

To counter the threat of global warming, there is a pressing need to cut the CO<sub>2</sub> emissions associated with physical distribution. Nikon is striving to quantify distribution routes and volumes for the major manufacturing subsidiaries in Japan, so as to obtain a clear picture of the amount of CO<sub>2</sub> emissions involved. It also runs courses on eco-friendly driving techniques and conducts environmental awareness activities for the trucking companies used by Nikon. As a result, Nikon's physical distribution was responsible for producing 2,368 tons of CO<sub>2</sub> in the year ended March 31, 2008.

In future, to promote safer, eco-friendly driving, a phased introduction of digital tachometers is planned for the trucks operated by Nikon Business Services. This technology will not only facilitate the creation of daily driving logs and contribute to reductions in fuel consumption, but also raise the safety awareness of drivers. A survey of the current arrangements for transporting IC/LCD steppers & scanners will be carried out to enable a full review of everything from transport planning to the overall transportation system; Nikon can thus improve efficiency. Another survey will start in the current fiscal year to gain a picture of the environmental load of physical distribution overseas; this will enable Nikon to plan cuts in the CO<sub>2</sub> emissions there too.

### Low-pollution vehicles

Three natural gas vehicles are used as commuter buses for Kumagaya Plant staff to help reduce CO<sub>2</sub> emissions.

Additionally, a phased plan has been established to replace the trucks operated by Nikon Business Services with vehicles offering low fuel consumption.



Bus fuelled by natural gas vehicle (Kumagaya Plant)

# Workplace-related Activities

In order to prevent global warming and to make a contribution to the creation of a resource-recycling society, Nikon is striving to ensure that each business unit is doing all that it can to save energy, to recycle waste, and to protect the global environment.

## Energy Saving

The main cause of global warming is the carbon dioxide (CO<sub>2</sub>) that results from the combustion of fossil fuels. Nikon is continuing efforts to help prevent global warming through a range of activities, but especially by saving energy so as to minimize CO<sub>2</sub> emissions.

The principal measures being adopted are: increasing the efficiency of HVAC equipment and switching to more efficient lighting equipment; improving production processes; and applying stricter controls on the use of lighting and office equipment. Additionally, the company is finding ways to harness natural energy sources.

### Energy-saving measures for the year ending March 31, 2009

- Promote upgrading of old refrigeration equipment
- Improve compressed air supply systems
- Improve cleanroom operation
- Switch energy sources (heavy oil → gas → electricity)
- Actively introduce high-efficiency equipment (HVAC systems, power systems, etc.)
- Ensure high efficiency of utilities and production facilities
- Integrate electrical facilities
- Improve quality control efficiency (production line improvement activities)
- Make use of natural energy sources
- Provide hard data for how much energy is used
- Conduct awareness activities

### ■ Installing high-efficiency equipment and using natural energy sources

Sendai Nikon was the first member of the Nikon Group to introduce a cogeneration system. Used in combination with high-efficiency equipment, it is producing considerable energy savings. (▶ See page 14 for further information.)

Making use of natural energy sources will become a priority in future energy-saving plans. In March 2007 the Yokohama Plant became cosponsor in a Yokohama City project to generate electricity using a large-scale windmill, which started operating in April 2007. In addition, the possible introduction of solar power systems at Nikon plants is currently being assessed.

Tochigi Nikon has installed a lighting system that uses both wind and solar power. It stores electricity generated by these eco-friendly natural energy sources in accumulators to power the lighting system; the electricity can also be used in emergencies to power radios and transceivers.

### ■ Energy-saving diagnosis for the workplace

As well as reducing the amount of energy consumed by factory equipment, improvements made to production

processes are of crucial importance. That is why Nikon conducts an energy-saving diagnosis for the workplace; this takes advantage of a third-party viewpoint to examine the workplace and search out where and how improvements can be made. For such a diagnosis, experts from outside the company are invited to the tour and inspect actual production lines and facilities. Their observations and comments can lead to ideas for improvement and specific points deserving study, based on which the company develops concrete measures.

It should not be forgotten that any progress with energy saving is actually determined by the attitude of each employee. For this reason, a seminar on energy saving is run in conjunction with the energy-saving diagnosis in an effort to heighten the personal awareness of the staff.

These diagnoses have primarily been conducted for those business centers that use the most energy; however, these activities will be continued and coverage will expand to include more business centers in future.



Hama-Wing (Yokohama City wind-power plant)



Lighting system that uses wind & solar power



Energy-saving diagnosis for a cleanroom

## Toward Zero Emission

### Main achievements for the year ended March 31, 2008

- Zero-emission systems have been maintained by Nikon and the major manufacturing subsidiaries in Japan.
- Preparations are complete for establishing zero-emission systems at 2 manufacturing subsidiaries in Asia (overseas).
- Measures for the reduction of mass-volume waste have been studied.

### Goals for the year ending March 31, 2009

- Zero-emission systems will continue to be maintained by Nikon and the major manufacturing subsidiaries in Japan.
- The establishment of zero-emission systems at 2 manufacturing subsidiaries in Asia will be studied.
- The amount of mass-volume waste generated by the 12 business units in Japan and 2 manufacturing subsidiaries in Asia will be reduced by 10% compared to the figure for the year ended March 31, 2006.

Japan is confronted with such problems as the mass consumption of resources and a shortage of landfill sites, so a key issue is now “reducing” — in other words, taking care of resources, not producing waste, or reducing it as much as possible.

The environment is precious and irreplaceable. Nikon is working hard to ensure thorough waste separation and volume reduction. And it is always seeking further improvement so that mankind can protect the environment and pass it on safely to following generations.

The Nikon Group has defined zero emission as “final (landfill) disposal amounting to less than 1% of the total amount of waste generated.” It has thus strengthened measures to promote the reduction and recycling of waste, for the “achievement of a zero-emission system at all plants by the end of the year ended March 31, 2005” has been a major goal of the Nikon Environmental Action Plan.

As a result, 12 business units, including manufacturing subsidiaries in Japan, have achieved zero emission to date. (▶ See page 59 for further information.)

### ■ Progress at Nikon

Despite the fact that production has increased, the total amount of waste generated by Nikon in the year ended March 31, 2008, was 2.0% less than the previous year. Having achieved a resource-recycling rate of 97.1% and a final (landfill) disposal rate of 0.51%, it was thus possible to maintain the zero-emission system. (▶ See page 60 for further information.)

At the Mito Plant, where small-group activities have been adopted, one success has been the in-house development of a compact cleaner that can sort and remove metallic waste, such as aluminum and steel shavings, produced as a result of metalworking processes in the factory. By automatically separating metal and oil with this device, resource-recycling is facilitated, and it has been possible to shorten the time previously spent on this task by 23 hours/year (70.6%).

### Example at Nikon



“Pochi” Mark 2, a metal waste separator/cleaner (Mito Plant)

■ Progress at major manufacturing subsidiaries in Japan  
Nikon’s major manufacturing subsidiaries in Japan have followed the example set by Nikon Corporation in pursuing waste reduction.

As a result, in the year ended March 31, 2008, they were able to reduce the total amount of waste generated by 3.9% compared to the previous year, in spite of growth in production. The recycling rate and final (landfill) disposal rate were 90.8% and 0.52%, respectively, meaning they also maintained their zero-emission systems. (▶ See page 60 for further information.)

At Sendai Nikon, where a zero-emission system has already been established, a gasification furnace is employed to promote the reduction and recycling of waste; the residue resulting from combustion is used as subgrade for building roads. A waste compacter reduces the volume of waste and also contributes to recycling.

### Examples at a major manufacturing subsidiary in Japan



Gasification furnace (Sendai Nikon)



Waste compacter (Sendai Nikon)

# Workplace-related Activities

## Control and Reduction of Chemical Substances in Manufacturing

### Main achievements for the year ended March 31, 2008

- Continued total elimination of hazardous chemical substances (chlorinated organic solvents used for washing) in Japan.

Nikon performs chemical substance control at every phase of the product life cycle, from purchase through use and disposal, in order to prevent pollution caused by these substances. When first purchasing a new chemical substance, the company obtains a Material Safety Data Sheet (MSDS) for the item, and carries out an assessment of the potential dangers of its use in the workplace. Actions taken on the basis of these results are firstly reviews, after which further, expert confirmation is sought from Nikon's Environment, Safety and Health Section.

In addition to these measures, Nikon's Data Center, located within the Ohi Plant, is responsible for centralized management of MSDS registration, updates and storage. This information is now being made available on the Nikon intranet.

Nikon places especially strict controls on chemical substances with higher environmental loading so as to reduce usage. By pursuing research on alternative materials, the company is continually striving to reduce the risk of chemical contamination to zero, as far as is possible.

### ■ Nikon's Pollutant Release and Transfer Register (PRTR)

In March 2000, the Nikon PRTR Guide was produced, and control activities were introduced at each plant for the chemical substances that are in use. The Guide stipulates quantitative management procedure for these substances — from purchase and use to disposal — as well as the handling of MSDS, and disposal safety management.

In March 2002, Nikon established a company system to comply with its legal responsibilities for notification, revising the Guide and adding a section on how to complete the official forms. (For information on the legal requirements for reporting to the government ▶ See page 59.)

\* PRTR (Pollutant Release and Transfer Register): A system requiring organizations to determine the volumes of emissions into the environment of chemical substances possibly harmful to human health and ecological systems and to report them annually to the government, which compiles the data and makes them available to the public.

## Preventing Air/Water Pollution and Protecting Water Resources

### ■ Preventing pollution of the air and water

To help preserve air and water quality, Nikon not only observes applicable laws and regulations, but has also established its own independent plant standards for management. Specifically, each plant regularly measures pollutants released into the air and water, and inspects equipment such as boilers and waste water processing systems periodically to ensure safety. (For air and water quality environmental data ▶ See pages 61-63.)

Moreover, in order to reduce emissions of pollutants at Nikon's Ohi Plant, superannuated heavy oil/gas-fired boilers and gas-engine air conditioning equipment are being replaced by energy-efficient electrical equipment that produces no polluting emissions.

### ■ Protecting water resources

At business units involved in production, progress is being made with plans to expand business and transform the business structure. Also, from the year ended March 31, 1999, when the Environmental Management System was introduced, water used for a production process is reused where possible, and all employees have been charged with conserving water so as to avoid rises in annual water consumption. (For water usage data ▶ See page 63.)

An example of the detailed measures being taken is provided by the West Building at Nikon's Ohi Plant. Here water is reused and rainwater stored for flushing toilets. Also, air cooling has replaced water cooling for air-conditioning equipment; water has been conserved by switching to a smaller dishwasher in the canteen kitchen; water usage has been cut by renovating the waste water processing facilities; and water-saving-type tap plugs have been installed.

## Progress Report on Soil Contamination Remediation at the Ohi Plant

In 2007, when some superannuated factory buildings were demolished at Nikon's Ohi Plant to make way for the construction of new ones, a soil contamination survey was conducted in accordance with the Tokyo Metropolitan Ordinance on Environmental Preservation. During this survey — conducted between January 10 and April 13, 2007 — high levels of a designated hazardous substance were detected on part of the site; specifically, hexavalent chromium was present at up to 3,600 times the guideline concentration, although the affected area was limited and inside a building. Also, trichloroethylene was detected at a level 1.8 times that of the guideline value; this was around a groundwater inspection hole that had

been bored near the perimeter of the Ohi site for the survey.

Shortly after this discovery, Nikon made a report to the Environment Bureau of the Tokyo Metropolitan Government and Shinagawa Ward Office; it also held briefings for local residents in April and July 2007. In accordance with the relevant laws and regulations, the company has been quick to take action so as to minimize any possible impact on the immediate environment. By the end of that year, these measures had been completed for the former No.2 Building site; remediation is still ongoing for the former No.1 Building site, and is scheduled for completion in the year ending March 31, 2009.