

Activities in the Product Environment

Environmentally Friendly Product Development Systems and Examples of Products

Targets

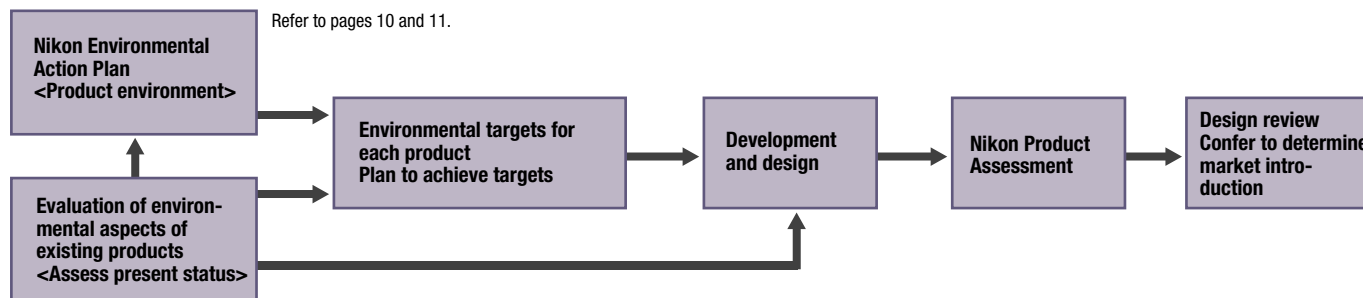
- [Energy efficiency]
- More than 30% improvement in overall energy efficiency of new products released, compared with figures of similar products already released.
- [Ozone layer-depleting substances]
- Reduction of IC and LCD steppers using HCFC as a refrigerant to fewer than 15% of all products.



As shown in the diagram below, Nikon is rapidly enhancing its products' environmental performance by gradually, steadily reinforcing "Nikon Environmental Action Plan" and "Nikon Product Assessment" content.

Each Nikon and Nikon Group company is thereby developing

new environmentally conscious products with greater commitment to global resource conservation, reduced power consumption, use of Eco-glass, maximum application of lead-free and hexavalent chrome-free plating technologies and minimal use of other hazardous substances, such as PVC.



In fiscal 2006, Imaging Company and Nikon Vision Co., Ltd. speeded up compliance with RoHS Directive's baseline*1, which took effect July 2006 in Europe, by completing preparations to meet these standards for new and existing products (examples of which are introduced hereafter).

*1 RoHS Directive baseline

- Applies to an extensive range of electrical and electronic products sold in Europe, to exclude use of particular materials and products unless they have no substitutes. In principle, this prohibits marketing of products containing hexavalent chrome, lead, cadmium, mercury and PBB/PBDE.
- Detailed standards had been determined by the end of summer 2005, but discussions regarding standards still continue.

Precision Equipment Company Products

● IC stepper NSR-S208D (shipment started in fiscal 2006)

Featuring a projection lens with a world's top-class standard and ultra-high NA of 0.82, this state-of-the-art lens-scanning KrF excimer stepper handles volume production of advanced 110nm or finer line-width devices. The optical system uses as much Eco-glass as possible. Boards utilising lead-free solder are also used.

<Energy efficiency> 27% higher than the NSR-S206D in exposure of a 300mm wafer (internal reference).

<Ozone layer protection> New HFC refrigerant with zero ODP (Ozone-depletion Potential) used for temperature control and air conditioning chillers.

<Global-warming substances> New HFE refrigerant with low global-warming potential used in equipment internal cooling.

<Lead-free solder>

At least 80% of an electronic circuit board uses lead-free solder. (Introduced successively after the start of mass production.)

<Eco-glass usage> 96%

Nikon steppers have introduced a new era in design rule shrink IC manufacture, and made major contributions to continuing improvements in resource utilisation efficiency.



NSR-S208D

● LCD stepper FX-71S/81S (announced in April 2005)

Developed by Nikon using technology based on multi-lens projection optical system and scanning exposure system, the FX-71S/81S achieves high resolution and exposure area covering 7th- and 8th-generation plate sizes. Greatly increases throughput (number of plates exposed per hour) and improves energy efficiency.

<Energy efficiency> The FX-71S is 56% more efficient and the FX-81S is 85% more efficient than the FX-63S in the exposure process. (Based on Nikon's calculation standards.)

<Ozone layer protection> New HFC refrigerant with zero ODP (Ozone-depletion Potential) used for temperature control and air conditioning chillers.

<Global-warming substances> New HFE refrigerant with low global-warming potential used for equipment internal cooling.

<Lead-free solder>

Some electronic circuit boards use lead-free solder. (After mass production is started.)

<Eco-glass usage> 90%



FX-71S/81S

Increasing Energy Efficiency of NSR-series IC Steppers

Nikon advances IC stepper design and manufacturing innovation with a finer IC pattern designed to raise resolution of projection optics systems, accommodate larger wafer sizes and enhance throughput to increase the number of IC cells that can be exposed within a given time.

Nikon adopted i-line (mercury lamp), KrF (Krypton fluoride

excimer laser) and ArF (Argon fluoride excimer laser) as exposure light sources to reinforce resolution in its product lineup. Yet, these new higher-performance models are very energy efficient, thereby dramatically increasing the number of IC cells exposed per unit of power consumed.

Imaging Company Products

● Digital SLR camera D200 (marketed in December 2005)

With the extra-high-quality images provided by 10.2 effective megapixels, the world's fastest start-up time, high-speed continuous shooting at five frames per second, stylish body and various advanced functions, the D200 realises picture-taking potential worthy of a high-performance digital SLR camera.

- <Reduced mass > 22% less mass than the D2x
- <Reduced dimensions> Approx. 39% less volume than the D2x (157.5 x 149.5 x 85.5mm → 147 x 113 x 74mm)
- <Simpler assembly and repair> Five electronic circuit boards are integrated into a single board, facilitating mounting, assembly and repair.
- <Lead-free solder> All electronic circuit boards use lead-free solder.
- <Reduction of hazardous substances> Complies with RoHS Directive baseline*1.
- <Eco-glass usage > 100%



D200

● Digital camera COOLPIX S5 (marketed in February 2006)

This compact digital still camera features a slim body (20mm thick), 3x Zoom-Nikkor ED lens, 6-megapixel CCD, large 2.5-inch LCD, rotary multi selector for fast scrolling, Pictmotion function for automatic creation of slideshows using selected image and music files, and other features at an attractive price.

- <Energy efficiency> 30% higher than COOLPIX S1
- <Lead-free solder> All electronic circuit boards use lead-free solder.
- <Reduction of hazardous substances> Complies with RoHS Directive baseline*1.
- <Eco-glass usage> 100%



COOLPIX S5

● Digital camera COOLPIX P3, P4 (marketed in February 2006)

These compact digital still cameras feature lens shift VR (Vibration Reduction) capability to compensate for lens movement during shooting, large 2.5-inch LCD and wireless LAN support (P3 only). The VR mechanism employs new compact VR unit and VR circuitry.

Despite their 8.1 megapixel CCDs and high-performance 3.5x Zoom-Nikkor lenses, these cameras are stylishly small and attractively priced.

- <Reduced dimensions> Their volume is 18% less than that of the COOLPIX P1 which has no VR mechanism, and thickness is reduced from 39mm to 31mm.
- <Lead-free solder> All electronic circuit boards use lead-free solder.
- <Reduction of hazardous substances> Complies with RoHS Directive baseline*1.
- <Eco-glass usage> 100%



COOLPIX P3

COOLPIX P4

● Interchangeable lens AF-S VR DX Zoom-Nikkor 18-200mm f/3.5-5.6G IF-ED (marketed in December 2005)

With enhanced, next-generation Vibration Reduction (VR II) system and high zooming power of approximately 11x, this lens enables clear focus throughout its wide focal range, as close as 50cm (20 in.) from the subject. Also, a compact SWM (Silent Wave Motor) delivers smooth, quiet autofocus drive performance.

- < Reduced mass > 3% (15g) less mass, despite the lens' 11x zoom performance, compared to 5x AF-S VR Zoom-Nikkor 24-120mm f/3.5-5.6G IF-ED
- <Lead-free solder> All electronic circuit boards use lead-free solder.
- <Reduction of hazardous substances> Complies with RoHS Directive baseline*1.
- <Eco-glass usage> 100%



AF-S DX VR Zoom-Nikkor ED 18-200mm f3.5-5.6G IF-ED

Instruments Company Products

● Digital camera set for microscope (marketed in June 2006)

DS-Fi1: Camera head DS-L2: Camera control unit with LCD DS-U2: PC-use camera control

High-resolution 5-megapixel digital camera for a wide range of applications including observation, archiving and simple measurement of images made visible via microscope. New image processor provides superior image quality, observation functions, various scene modes and networking capability.

Reduced power consumption and improved motion picture frame rate dramatically enhances energy efficiency.

- <Energy efficiency> 84% higher than the set of DS-5M, DS-L1 and DS-U1.
- <Lead-free solder> All electronic circuit boards (4) use lead-free solder.
- <Reduction of hazardous substances> Electronic circuit boards, mechanical parts and outsourced parts complying with RoHS Directive baseline were selected at the design stage.

● Automatic Macro Inspection System AMI-3300 (marketed in April 2006)

To speed up inspection of IC wafer appearance, Nikon's original diffracted light reception system can handle patterns as fine as 55nm, and achieve throughput of 150 wafers per hour. Capability to distinguish among various defects, detection sensitivity and inspection accuracy are also enhanced. The system can inspect twice as many IC cells as a conventional model consuming the same energy.

- <Energy efficiency> 100% higher than the AMI-3000.
- <Reduction of hazardous substances> Plastic parts and sheet boards do not use PBB, PBDE (flame retardant), cadmium, lead and PVC.
- <Ozone layer protection> CFC and HCFC refrigerants are not used.
- <Eco-glass usage> 98%



DS-L2 camera control unit with LCD



AMI-3300

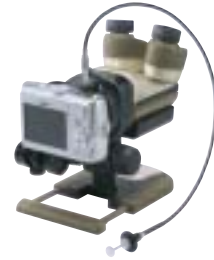
Nikon Group Products

● Nikon Fieldmicroscope Series “EZ-Micro” (marketed in November 2006.)

As the most advanced Nikon Nature Series Fieldmicroscope for field observation of insects, plants and minerals, EZ-Micro employs a prism with phase-difference compensation coating in its optical path, allowing photographers to shoot high-quality photos using a Nikon compact digital camera.

Many of its body surface materials and its packaging bag are made of bioplastics produced from corn. This conserves petroleum.

<Use of bioplastics> Four body parts and packaging materials are made of bioplastics produced from plants.
 <Saving resources by using existing model parts > Camera brackets are same as those of Nikon Fieldscopes.
 <Reduction in hazardous substances> No PVC in body, case and strap, according to Nikon Green Procurement Guidelines.
 <Eco-glass usage> 100%



EZ-Micro

● Fieldscope ED50/ED50 A (marketed in September 2005)

These entry-level Nikon Fieldscope models are very portable, with 50mm objective diameter. Nikon ED glass in the objective lens compensates for chromatic aberration for clear, accurate views. Multilayer-coated lenses, prisms and dustproof glass make for exceptionally bright images.

<Reduced mass> ED50 mass is 58% less than Nikon Fieldscope EDIII. Overall length is about 30% less.
 <Long-life design> Waterproof construction with nitrogen gas filling prevents raindrops from entering.
 <Saving resources by using existing model parts > Eyepieces and camera brackets are same as those of existing models.
 <Reduction in hazardous substances> No PVC in body, case and strap, according to Nikon Green Procurement Guidelines.
 <Eco-glass usage> 100%



ED50-A

Activities in the Product Environment

Examples of Implementation in Sales

Nikon is working tirelessly to reduce the total and long-term environmental impact of its products and services. Since Nikon supplies products worldwide, we must also pay strict attention to sales and distribution activities. The following are some examples of our reuse and recycling efforts in these areas:

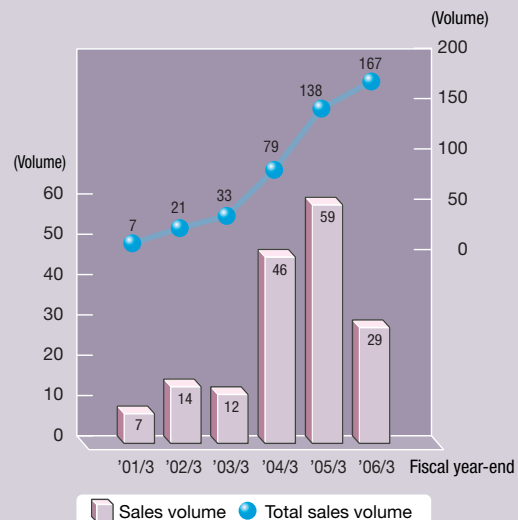
1. Sales of refurbished steppers for reuse

Since fiscal 2001, Nikon Tec Corporation has been collecting used steppers discarded by customers, then reconditioning and reselling them for new users, in Japan and overseas, with appropriate services supplied. This is an example of Nikon's willingness and capability to reuse its own products. Nikon Tec Corporation has enhanced this business by combining customer satisfaction with an aggressive stance toward environment protection, contributing to society in order to provide a secure income.

Thirty-three steppers were shipped in the period from fiscal 2001 to fiscal 2003, followed by 46 steppers in fiscal 2004, and 59 steppers in fiscal 2005. Although fewer steppers were shipped in fiscal 2006 than in the previous year, the total volume of shipments had reached 167 units by the end of fiscal 2006. The manufacturing department, which lends its efforts to the reproduction and control process, shortens the work period radically and supports business expansion by promoting the improvement of industrial tools and machines, standardising of the workflow and improving its efficiency and putting in place a framework for technical troubleshooting.

Nikon is conducting in-depth research on the needs of the semiconductor industry, in order to help companies in the field to expand their businesses. This is another area in which our dedication to environmental preservation, profitability and customer service shines through.

Sales volume of Nikon refurbished steppers



The popular NSR-220Si 12D was initially marketed in 1996.

2. Recycling of batteries

(1) In Japan

Nikon and many other companies have engaged in cooperative efforts with JBRC (Japan Battery Recycling Centre) to collect and recycle rechargeable batteries for Nikon digital cameras and other products discarded by consumers.

(2) In Europe

Our subsidiaries participate in recycling associations that collect and recycle used camera batteries according to local rules and regulations of each nation.

3. Recycling of used Nikon products in Europe

The WEEE Directive* issued by the EU guides nations to enact laws and regulations as well as establish used product collection/recycling systems. Accordingly, Nikon's European subsidiaries, led by that in the Netherlands, prepared to accommodate enforcement of such new laws and regulations for collection/recycling of digital cameras and other Nikon products in respective markets.

By the end of fiscal 2006, Nikon had participated in or registered with collection organisations in 15 nations including the Netherlands, Germany, Sweden and Spain, and prepared to collect Nikon products.

Also, at the design and manufacturing sites, recycling-oriented product design, markings and messages requesting customer cooperation have been prepared to facilitate used product collection/recycling.

However, nations like the U.K. and France are behind schedule in enacting and enforcing relevant laws and systems, and it is not completely clear which products the laws apply to, so Nikon continues to make progress on these issues as they apply to each nation.

*WEEE Directive of EU stipulates that manufacturers of major electric and electronic equipment are responsible for recycling used products as of August 2005.



Recycling mark in EU

Activities in the Product Environment

Packaging and Distribution

Targets

[Greenhouse effect gas emissions]
• Gauging CO₂ emissions in distribution in Japan



■ Measures for Packaging

Nikon defined its "Environmental Policy Regarding Packaging Materials" in May 1998, and reviewed it in June 2000. This policy has seven main points:

1. Elimination of hazardous substances
2. Reduction in volume and content
3. Recyclability
4. Safety and ease of separation of materials
5. Use of recycled resources
6. Reusability
7. Marking regarding packaging materials and handling precautions

Imaging Company* is taking steps to raise loading efficiency of distribution. For example, product package dimensions were formulated to maximise utilisation of available airplane cargo space. The Company thereby reduced digital SLR camera box sizes by 20%, made instruction manuals thinner and switched from conventional containers to pallets for transportation, eliminating the need for voluminous box packaging.

Instrument Company* continues using inserts for safe, easy separation of cushioning materials and carton boxes. Some products use pulp-mould packaging, efficiently using recycled resources.



Pallet transportation for digital SLR cameras



Pulp-mould containers

Moreover, sales subsidiary companies promote vinyl chloride resin-free packaging and other environmentally friendly measures including use of biodegradable materials for the Fieldmicroscope EZ-Micro.

*These companies are parts of Nikon Corporation's internal organisation.

■ Recycling of Packaging Materials

In Japan, Nikon is consigning to the Japan Containers And Packaging Recycling Association the task of collecting/recycling packaging materials after Nikon products are sold.

■ Measures for Distribution in Japan

CO₂ emissions, major causes of global warming, are accelerating partly due to distribution in Japan, and rose about 12% from fiscal 1991 to fiscal 2003.

Nikon thereby made its fiscal year 2006 the first year of its energy-saving initiative for distribution. We are now structuring the system to gauge transportation volume (ton-km) in each company's product delivery.

For example, Nikon Logistics Co., Ltd., a transportation subsidiary, gives lectures about economical driving to its truck drivers, thereby helping to reduce fuel consumption.