

DENSO

DENSO CORPORATION
Environmental Report 2002



Expanding the Horizons of Responsibility

Broader Partnerships for a Sustainable Society

Just ten years have passed since the first global environmental summit was held in Rio de Janeiro, Brazil, and the adoption of the Rio Declaration and Agenda 21, an environmental action plan for all mankind for the 21st century. However, certain factors, such as the widening hole in the ozone layer over Antarctica and the increase in CO₂ concentrations, mean that it is too early to speak of signs of improvement in the global environment.

There is now an increasing realization that environmental damage is the most important challenge facing society. In particular, pressure has grown for more significant reductions of resources consumed by automobiles and the environmental impact imposed.

As one of the biggest automobile parts manufacturers in the world, we at DENSO CORPORATION are proud to fulfill our obligations in regard to these concerns. We believe by safeguarding the environment our business will grow. Also, we aspire to become a forerunner in environmental protection by focusing our management resources on creating a new paradigm for corporate behavior in the 21st century.

A corporation that pursues sustainable growth in the 21st century must focus its management efforts not only on making the most of business resources but also environmental and social issues. It is widely believed in Europe and the United States that companies that embrace this approach will not only achieve more efficient management but will also be better protected against future risk and well positioned to improve their performance. DENSO supports and has enshrined these principles in its Triple Bottom Line (economy, environment, and society) approach to management: Based on these principles, we will step up our efforts to create partnerships with other like-minded enterprises and organizations.

Based on DENSO EcoVision 2005, the whole Group is determined to build a firm foundation for environmental management.

In fiscal 2001, ended March 31, 2001, we succeeded in achieving nearly all our environmental goals, principally a reduction in CO₂ emissions from manufacturing plants and improvement of product recyclability ratios.

For example, we have begun the mass production of a belt-type compact starter generator, combining the starting device and charger, for the world's first hybrid car. This significant contribution improves fuel economy. To remove pollutants from engine emissions we developed high-pressure injection technology for a common-rail-type diesel system that we were the first in the world to commercialize.

This injection technology not only satisfies European exhaust emission standards, which are among the strictest in the world, but is also efficient enough to meet the next generation of regulations. This widely praised technology earned us a place in the Dow Jones Sustainability Indexes in fiscal years 2000 and 2001 and in 2001 was also awarded an AAA environmental performance ranking by Innovest. These are among the highest commendations won by any automobile parts manufacturer in the world.

This is DENSO's 4th annual environmental report. It presents all DENSO's efforts in fiscal 2001 in reaching sustainable development goals based on its environmental protection activities. I would be grateful to hear readers' candid opinions about what more we can do to improve the quality of the environment.



Hiromu Okabe

Hiromu Okabe
President

VISION

Highlights of Fiscal 2001

Environmental Management

¥21.8 billion (US\$163.8 million) spent improving the environment

In fiscal 2001, DENSO incurred environmental protection costs of ¥21.8 billion (US\$0.16 billion), and derived benefits totaling ¥3.3 billion (US\$25.0 million). The number of companies covered by our "DENSO Group Environmental Accounting Guidelines" and our environmental audits has been increased to 16 from the start of the current fiscal year.

Environmental Management

Data now gathered from 28 DENSO companies

DENSO has expanded the scope of its environmental performance data collation from two companies (DENSO and ASMO Co., Ltd.) to a total of 28 companies.

A WORLD LEADER



IN PRODUCT MANUFACTURING—A CLOSER LOOK

Revolutionary Fuel Pump

Fuel needed for combustion in engines is forced into the injector by the fuel pump. When the internal electromagnetic valve is opened, the fuel is injected into the inside of the suction pipe. The fuel pump is usually installed inside the fuel tank. DENSO's fuel pump, which features a truly revolutionary compactness and lightness, became the market leader in its category in 1990, and had a 20% share of the world market in fiscal 2000 (DENSO estimate).



* U.S. dollar amounts have been translated only, at the rate of ¥133=US\$1, the approximate exchange rate prevailing on March 29, 2002, the last trading day of the fiscal year.

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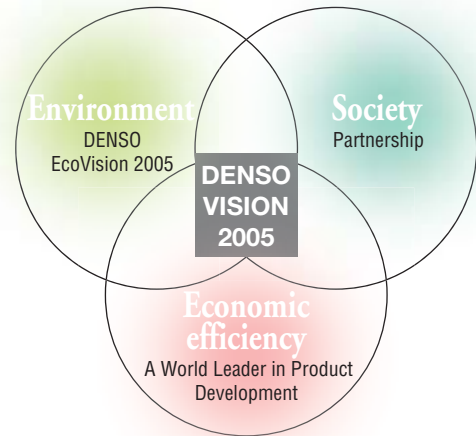
DENSO DATABOOK

The DENSO Philosophy and DENSO VISION 2005

In 1997, we formulated the long-term management policy, DENSO VISION 2005. Based on DENSO's fundamental management principles, it describes the kind of company that DENSO aims to be and sets the direction for all of our employees' activities at the beginning of the 21st century. In line with the DENSO VISION 2005 we will open the door to possibilities for society, customers, and employees.

DENSO EcoVision 2005 was conceived in June 2000 as a means of implementing the specific environmental policies and action plans under DENSO VISION 2005 and ensuring that corporate activities take into due account environmental considerations.

* ⇒  See page 6



The DENSO Philosophy

Mission

Contributing to a better world by creating value with a vision for the future.

Management principles

1. Customer satisfaction through attractive products
2. Global growth through anticipation of change
3. Environmental preservation and harmony with society
4. Corporate vitality and respect for the individual

Individual conduct

1. To be creative in thought and steady in action
2. To be cooperative and pioneering
3. To be trustworthy by improving ourselves

DENSO VISION 2005 ▶ Opening the Door to Possibilities

First, DENSO will open the door to possibilities for society

DENSO will work to realize a better environment by reducing exhaust emissions and improving energy efficiency and help build a society of enriched interaction between people by various means, including automobiles and information and telecommunication systems.

Second, DENSO will open the door to possibilities for customers

DENSO is striving to become a company that truly serves and pleases its customers, offering new value to help them achieve their dreams and thereby contributing to their general well-being.

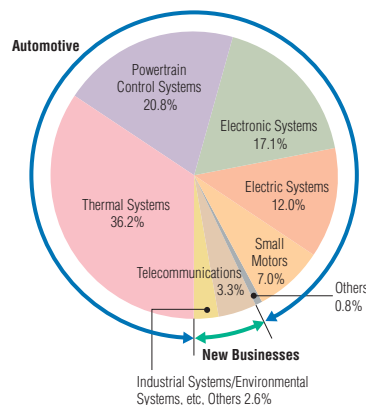
Third, DENSO will open the door to possibilities for its employees

We wish to remain a company that respects every single employee and assists each one in full self-realization along with making it evident that employees' growth in personal abilities leads to company growth and, in turn, leads to societal progress.

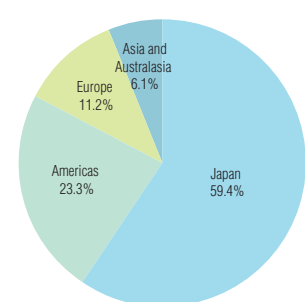
Company Data

Corporate Name:	DENSO CORPORATION
Date of Establishment:	December 16, 1949
Capitalization:	¥173.0 billion (US\$1.3 billion)
Primary Businesses:	Powertrain control systems, electric systems, electronic systems, thermal systems, small motors, telecommunications, industrial systems
Group:	Subsidiaries— 61 domestic companies, 87 overseas companies Affiliates— 13 domestic companies, 12 overseas companies

Sales by Product



Sales by Region

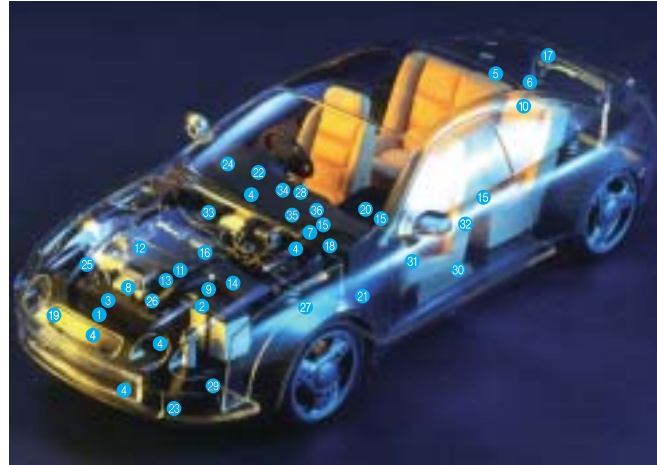


Fostering Sustainable Development

Sharing the belief that the companies best positioned for sustainable growth in the 21st century will be those that not only perform optimally as businesses, but also concern themselves deeply with environmental and social issues, DENSO participated in a meeting of the World Business Council for Sustainable Development in fiscal 2000.

In addition to building up its business on the strength of a world-class manufacturing track record in 16 product categories, DENSO is engaged in environmental initiatives through the DENSO EcoVision 2005 program. Additionally, we are stepping up efforts to build partnerships with a broad range of companies and other concerned entities, to better fulfill our social responsibilities as a corporate citizen.

Automotive parts supplied by DENSO



Thermal Systems

- 1 Radiator
- 2 Oil cooler
- 3 Intercooler
- 4 Car air conditioning
 - Air conditioning panel
 - Compressor with magnetic clutch
 - Condenser
 - Evaporator
 - Heater core
 - Blower unit
 - Air conditioning sensors
- 5 Air purifier
- 6 Rear cooling unit
 - Refrigeration unit
 - Fully automated bus air conditioner
 - Truck refrigeration unit

Powertrain Control Systems

- 7 Electronic fuel injection
 - Electronic control unit

- Airflow meter
- VCT
- Oxygen sensor
- Air/fuel ratio sensor
- Manifold absolute pressure sensor
- Electronic throttle body
- Idle speed control valve
- Fuel injector
- Fuel pump
- Exhaust gas recirculation valve
- Electronically controlled diesel system
- Electronic control unit
- Supply pump
- Injector
- Common rail
- Diesel fuel injector pump
- 8 Air cleaner
- 9 Oil filter
- 0 Fuel filter
- A Distributorless ignition system
- Igniter
- B Spark plug

- C Knock control system
- Electromotive air pump
- D Monolithic substrate
- Charcoal canister
- E Exhaust sensor
- F Ignition coil

Electronic Systems

- G Rear windshield wiper
- H IC flasher
- I Horn
- Electrically operated antenna
- Relays
- J Airbag sensing system
- K Wireless door lock control
- L Headlight controller
- M Corner detecting and ranging system
- N Instrument cluster
- Heads-up display

Electrical Systems

- O Starter

- P Alternator
- Q Suspension control
 - Antilock braking system
 - Traction control system
- R Vehicle stability control system
 - Power steering system
- S Crash sensor
- Cruise control system

Motors

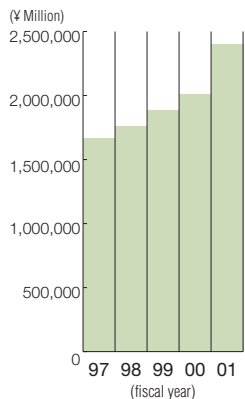
- T Window regulator motor
- U Power seat motor
- V Power window motor
- W Washer motor

Telecommunications

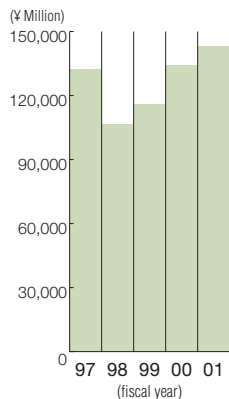
- X Car navigation system
- Y Emergency notification system
- Z Electronic toll recovery system
 - Advanced vehicle operation system
 - Multiplexing systems

Overview of Consolidated Performance

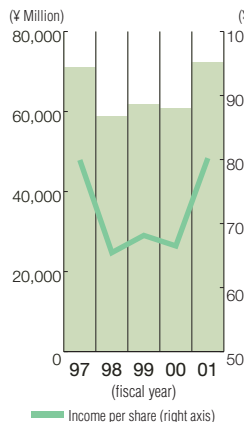
Net sales



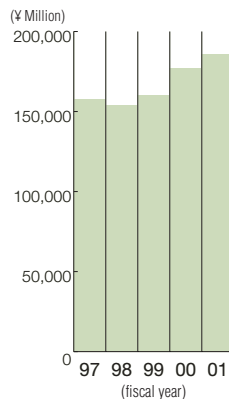
Ordinary income



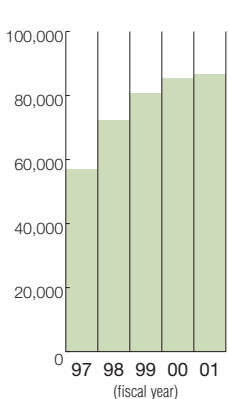
Net income and NPS



R&D expenditure



Number of employees



Business Activities and Environmental Impact, and Our Response

Our Business Activities and the Environment

Most DENSO products are sold to automobile manufacturers for installation inside motor vehicles. When these vehicles are used, DENSO products contribute to environmental impact. Because of this, DENSO is concerned not only with its own manufacturing processes but also with products' use in automobiles and their fate when the automobiles are eventually scrapped.

Our Business Activities and Environmental Impact

By carefully recording inputs and outputs during manufacturing and other business activities, DENSO is developing comprehensive and efficient methods of reducing environmental impact.

Inputs mainly consist of electric power and other forms of energy, water, product raw materials, cleansing agents, paint and other substances used during manufacturing processes, packing materials and truck fuel needed for logistics, and office-use paper. Other than finished products, outputs consist mainly of CO₂ and other harmful gases released during energy consumption, exhaust gases and effluents from manufacturing processes, and other industrial and general waste substances. Besides materials included in finished products, substances causing environmental impact consist of exhaust gases and effluents from factories and waste materials.

Details of DENSO's business activities are shown in the diagram to the right.

Product Development and Manufacture, and Environmental Impact

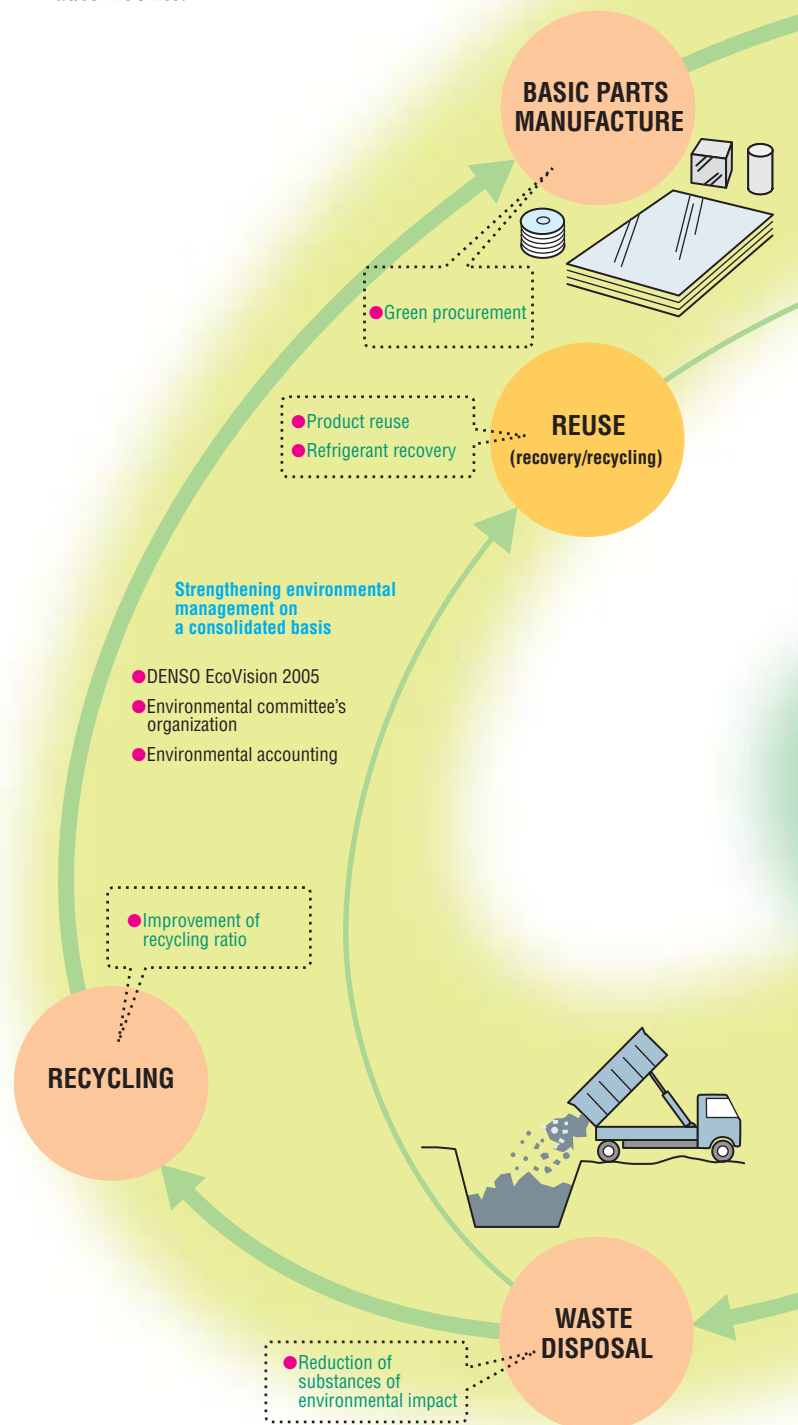
A high degree of product reliability is necessary to ensure the efficient operation of automobiles that must sometimes cope with harsh weather conditions and that the components perform their basic functions. These requirements are particularly valid for DENSO since we have an exceptionally varied range of products, many needing systems for cooling, fuel injection, and battery charging. Therefore, key technologies used from the raw materials processing and the manufacturing stage through commercialization are developed in-house and important components are built into our products. Because a higher degree of reliability is required for automobile parts, the substitute sourcing of materials and devices from companies in other industries is not easy.

Product-Based Environmental Management

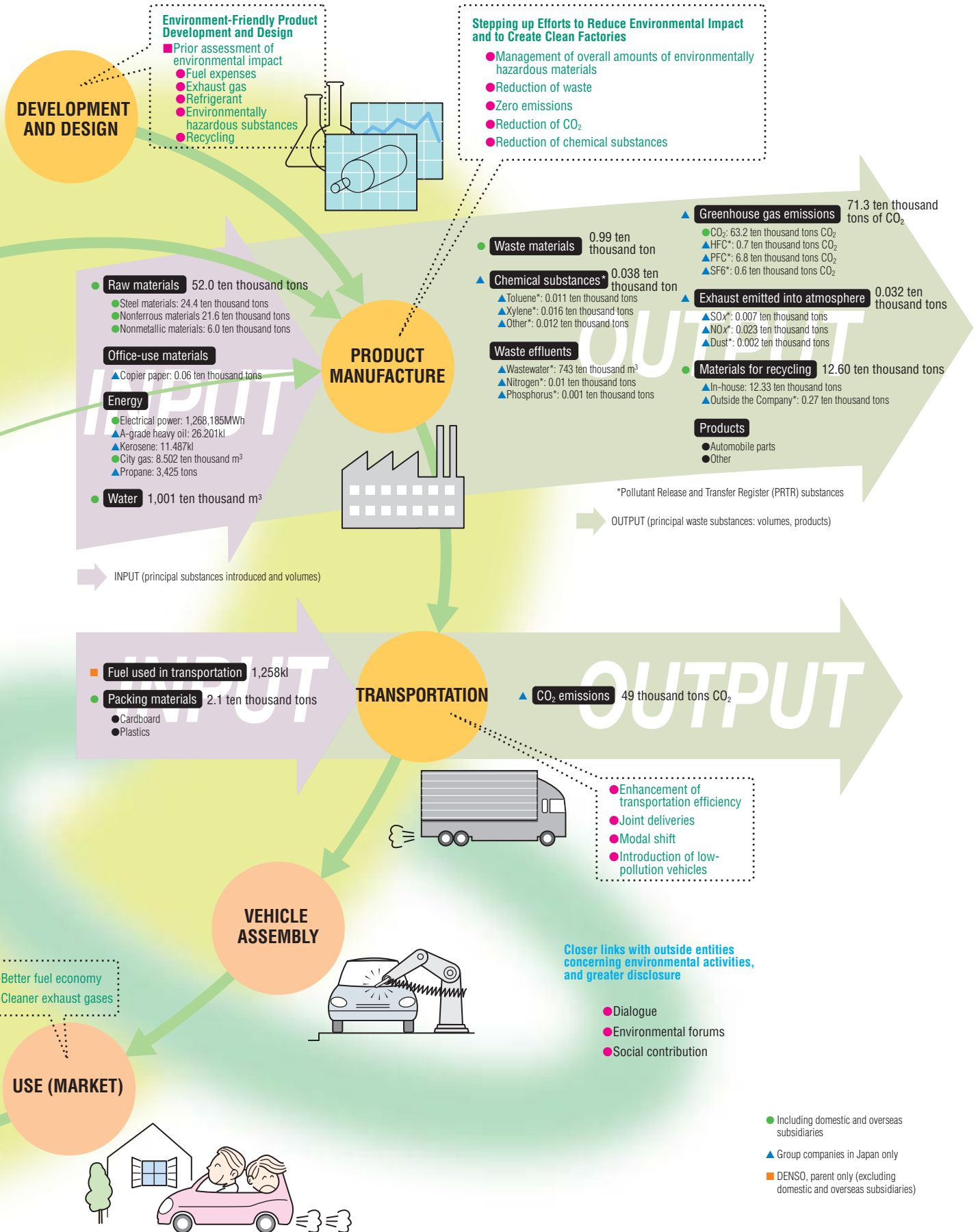
How can the environmental impact of automobiles be reduced? DENSO's answer is the development of cleansing technologies for exhaust gases, control systems for more efficient fuel consumption, and products that can easily be recycled. At the same time, we are contributing to the development of fuel cell

(clean energy) cars and hybrid vehicles through advances in car electronics.

DENSO's environmental management is particularly concerned with product lifecycles, emphasizing the period of use and disposal. These considerations are uppermost in the development and design stages, and our engineers are always mindful of them in the use and disposal stages. To this end, DENSO products help reduce the environmental impact of automobiles.



▼ Environmental Impact—Comprehensive Overview  See page 36



DENSO EcoVision 2005



 See page 34

DENSO EcoVision 2005

DENSO is pursuing DENSO EcoVision 2005 on a Groupwide basis. This five-year plan, which was conceived in June 2000, came into effect in fiscal 2001 and will run through fiscal 2005. It followed on from the Second Environmental Action Plan launched in fiscal 1996, the goals of which were broadly achieved by fiscal 1999. As stated in the declaration of commitment for DENSO EcoVision 2005, DENSO aims to remain a forerunner in environmental protection by focusing its management resources to create a new paradigm for corporate behavior in the 21st century. This was the inspiration behind the revision and strengthening of our Environmental Conduct Guidelines (1993), and our establishment of the Third Environmental Action Plan.

DENSO EcoVision 2005 has four sections: Commitment, Basic Policies, Action Plan, and the Third Environmental Action Plan.

Commitment

We are resolved to ensure that DENSO's R&D activities help create a recycling-oriented economy and society, and foster harmony with nature as well as pursue sustainable environmental protection.

Basic Policies

We will pursue dialogue with all concerned parties in environmental issues, while strengthening our environmental management from a global perspective and keeping in mind environmental considerations in all our business activities, from a total perspective based on product life cycles.

Action Plan

We will further our environmental protection based on four guidelines.

Third Environmental Action Plan

We will set specific targets and goals within the four-guideline framework, and each company in the Group will pursue them through annual plans.

DENSO EcoVision 2005—Third Environmental Action Plan Conceived in Fiscal 2000

Guidelines	Action Needed	Goals and Targets for Fiscal 2005	
Reinforcing Environmental Management that is Compatible with Consolidated Management	(1) Strengthened actions taken as a Group	① Consolidated subsidiaries will follow the same policies and guidelines, but each will also draw up and pursue an individual environmental action plan ② Acquisition of ISO 14001 certification by fiscal 2002	
	(2) Expansion of the Environmental Management System	③ Enhancement of the environmental committees of domestic Group companies	
	(3) Optimization of the promotional organization	④ Establishment and operation of environmental committees in each overseas region	
	(4) Enhancement of environmental management tools	① Creation of internal environmental accounting standards ② Disclosure of environmental costs and benefits	
	Environment-Friendly Development and Design	(1) Enhancement of environmental evaluations at the development and design stages	① Implementation of prior environmental evaluations for products • Establishment of targets for reducing products' environmental impact in terms of fuel consumption, exhaust gases, refrigerants, environmentally hazardous substances, and recycling ② Provision of environmental information on products to customers
		(2) Strengthening of connections with suppliers	① Formulation of Procurement Guidelines and implementation with focus on suppliers • Requests to suppliers to set up Environmental Management Systems by fiscal 2003 • Management and reduction of environmentally hazardous substances through Chemical Substance Information Management Systems ② Promotion of Green Purchasing
		(3) Improved fuel efficiency	① Promotion of fuel consumption regulations as well as development of new technologies and products ② Promotion of efforts to lessen the weight of auto parts ③ Promotion of development of new technologies and products for making ITs a reality
(4) Cleansing of exhaust gases		① Promotion of development of new technologies and products that meet exhaust gas regulations and self-imposed standards	
(5) Improved recyclability		① Increase the recyclability of auto parts with the goal of reaching an effective recycling rate of 95% for end-of-life cars by fiscal 2015 ② Increase ability to dismantle/disassemble cars and easily use recycled materials; standardization of materials ③ Promote advances in materials recycling technologies	
(6) Management and reduction of environmentally hazardous substances		① Expansion of list of substances requiring management and strengthening of monitoring systems to satisfy domestic and overseas regulations and suppliers' standards ② Take an active approach to self-management standards and substitute technologies	
(7) Global-warming measures with regard to car air conditioners		① Development of air conditioners that use new refrigerants (CO ₂) in place of HFCs	
Realization of Clean Factories through Further Reduction of Environmental Impact	(1) Advancements on the resource efficiency and zero emissions fronts	① Zero emissions • Reduction of landfill waste products to zero at all plants by fiscal 2003 ② Development of materials usage and resource reuse management systems to reduce volumes of waste and recyclable materials from production processes ③ Progress toward paperless workflows through effective application of Internal Information Network Systems	
	(2) Stronger measures to manage and reduce environmentally hazardous substances	① Thorough PRTR management • Reduction of targeted emissions to 70% of fiscal 1998 level by fiscal 2005 ② Reduction of volatile organic compounds emissions • Reduction of toluene and xylene emissions to 50% of fiscal 1998 level by fiscal 2005	
	(3) Energy efficiency	① Reduction of CO ₂ emissions from manufacturing plants to 90% of 1990 level by fiscal 2010 ② Promotion of creation of Perfect Energy Factories, which aim to minimize energy losses	
	(4) Advances in logistics rationalization	① Stabilization of CO ₂ emissions associated with logistics activities to below 1990 level by fiscal 2005 ② Reduction of volume of packaging material used to 80% of fiscal 1995 level by fiscal 2005	
Promotion of External Environmental-Action Alliances and Enhanced Disclosure	(1) Progress in the creation of connections to external parties for the realization of a recycling society	① Establishment of company for reusing used parts (fiscal 2000) ② Promotion of parts recycling technology ③ Consider automobile parts recycling system	
	(2) Enhancement of information disclosure	① Environmental Report • Expansion of number of companies subject to environmental activities to include all consolidated domestic and overseas subsidiaries by fiscal 2003	
	(3) Strengthened relationships with local areas	① Staging of environmental exhibitions at individual plants ② Holding of local discussion meetings on the environment	

Targets and Results			
Fiscal 2001 Goals	Fiscal 2001 Achievements	Evaluation	Fiscal 2002 Action Plan
(1) Create framework for monitoring progress in fiscal 2001 common environmental action plans of group companies (2) ISO 14001 acquisition at five domestic and four overseas subsidiaries (3) Step up regular domestic group committee and exchange meetings (4) Strengthen links between offices in each region	(1) Began publication of progress reports for each group company and set up an environmental home page (2) ISO 14001 acquisition at 6 domestic companies (14 out of a total of 16) and 4 overseas companies (26 out of a total of 35) (3) Held two committee and officer meetings for domestic group companies and nine exchange meetings (4) Set up liaison committee for offices around the world (Feb. 2002)	○ ○ ○ ○	(1) Set up Groupwide mechanisms for joint progress reports on handling controlled substances; establish support mechanisms (2) ISO 14001 acquisition at two domestic subsidiaries and eight overseas ones (3) Extend crisis management mechanisms to cover the whole Group
(1) Create standards for evaluation (2) Trial audit by segment, and disclosure of findings	(1) Compiled DENSO environmental accounting guidelines (2) Compiled and released environmental accounts for establishment of recycling center	○ ○	(1) Extend environmental accounting guidelines to cover the Group companies (2) Trial adoption of new environmental management indicators
(1) Renewal of ISO 14001 certification for Development and Design Department	(1) Renewal of ISO 14001 certification for Development and Design Department	○	(1) Establish operational rules more firmly, and enhance environmental performance
(1) Compilation of plan for EMS creation at each supplier	(1) Completion of EMS establishment at 38% of 908 suppliers subject to DENSO environmental provisions • Held explanatory meeting regarding measures for environmentally hazardous substances in finishing processes	○	(1) Begin to encourage adoption of EMS at all suppliers covered by DENSO environmental provisions
(1) Development of technologies for next-generation fuel-efficiency regulations	• Developed integrated starter generator (ISG) for hybrid cars • Developed control system for adjusting car air-conditioner compressor performance to driving conditions during car use	○	(1) Development of technologies for next-generation fuel-efficiency regulations
(1) Development of technologies for next-generation exhaust regulations (Japan, Europe, United States)	• Gasoline-fueled vehicles: Developed electronic throttle containing new built-in noncontact-type sensor • Diesel-fueled vehicles: Developed common-rail system with a maximum cylinder pressure of 1,800 bar • Developed Diesel Particulate Filter (DPF) for exhaust purifiers	○ ○	(1) Development of technologies for next-generation exhaust regulations (Japan, Europe, United States)
(1) Increase the recyclability ratio to 92.5% (2) Development of technologies for materials recycling	(1) Raised the recyclability ratio to 96.9% (2) Established composite recycling technology for nylon 66	○ ○	(1) Raise recyclability ratio to at least 95% • Revise standards for calculation of recyclability ratio
(1) Expansion and updating of list of substances requiring special management (2) Substitution of substances subject to European vehicle scrapping regulations	• Cooperated with Japan Automobile Manufacturer's Association, Inc. (JAMA) in compiling unified lists of environmentally hazardous substances and research formats • Began shift to alternatives to hexavalent chromes for finishing processes	○ ○	(1) Revise list of substances needing special management (2) Complete changeover to substitute materials for domestically produced hexavalent chrome (yellow, gloss). Begin changeover for hexavalent chrome produced overseas
(1) Commercialization of air conditioners with new (CO ₂) refrigerant	(1) Research solutions to outstanding reliability and safety problems in advance of mass production	○	(1) Commercialize air conditioners using new refrigerant (CO ₂)
(1) Creation of recycling technologies for waste that is not easy to process (2) Development and trial of system for measuring and analyzing total emission volumes	(1) Completed development of recycling technologies • Achievement of zero emissions at Hiroshima factory (01/8) [Zero emissions now achieved at 3 out of 14 business locations] (2) Development of measurement and analysis system for total emission volumes	○ ○	(1) Achieve zero emissions at all business locations (2) Push for zero emissions at Group companies (3) Reduce overall volumes of emissions
(1) 17% reduction in emission quantities of PRTR substances, compared with fiscal 1998 (2) 28% reduction in emission volumes for toluene and xylene compared with fiscal 1998	(1) 25% reduction from 1998 levels (2) 32% reduction from 1998 levels • Completed development of substitute technologies for paint application and drip-proofing agents for electronic substrates	○ ○	(1) Reduce emission volumes of PRTR substances to 28% below fiscal 1998 levels (2) Reduce emission volumes of volatile organic compounds (VOCs) to 34% below fiscal 1998 levels
(1) Assuming 1990 is 100, reduce CO ₂ emission volumes to 107 or under (versus 112 if no action is taken) (2) Reduce CO ₂ emissions volume: 28,200 tons-CO ₂ /year	(1) Assuming 1990 is 100, reduced CO ₂ emission volumes to 104 (2) Reduced CO ₂ emission volumes: 29,700 tons-CO ₂ /year	○ ○	(1) Assuming 1990 is 100, reduce CO ₂ emission volumes to 102 (CO ₂ reduction volume: 28,200 tons-CO ₂ /year) (2) Manage targets for CO ₂ emissions for DENSO Group in Japan
(1) Reduce total CO ₂ emissions from transportation activities to fiscal 1990 levels (2) Reduce volume of packing materials used to 16,000 tons per year	(1) CO ₂ emission volumes during transportation: 41,100 tons-CO ₂ , down 5% from 1990 (2) Volume of packing materials used: 14,600 tons, down 27% from 1995	○ ○	(1) Stabilize at or below fiscal 2001 levels (2) Stabilize at or below fiscal 2001 levels
(1) Verification of pulverization and separation of metal-coated resin parts (2) Support for construction of systems for refrigerant recovery and destruction • Raising refrigerant recovery equipment ratio to 50%	(1) Test recycling of motors and printed circuit boards (2) Distribution of systems and PR pamphlets • Achieved 50% installation of refrigerant recovery equipment	○ ○	(1) Register environmental recovery companies at all service station stores (2) Achieve 60% installation of refrigerant recovery equipment
(1) Expand environmental report issued in fiscal 2001 to cover all Group companies	(1) Added ASMO Co., Ltd. to companies covered	○	(1) Extend environmental report requirements to 16 domestic and 12 overseas consolidated manufacturing subsidiaries
(1) Environmental forum with local community in Kariya area, Japan (2) Establishment of environmental educational programs for young people	(1) Joint event with six Toyota Group companies (April) (2) Carried out the Eco-ranger 21 environmental educational program for students in higher classes of elementary schools in Kariya	○ ○	(1) Hold environmental forum for all parties concerned (2) Expansion of environmental educational programs (to include Nishio area, Japan)

Environmental Management

Fiscal 2001 goals

- (1) Create framework for monitoring progress in fiscal 2001 common environmental action plans of Group companies
- (2) ISO 14001 acquisition at five domestic and four overseas subsidiaries
- (3) Step up regular domestic group committee and exchange meetings
- (4) Strengthen links between offices in each region

Fiscal 2001 achievements

- (1) Began publication of progress reports for each Group company and set up an environmental home page
- (2) ISO 14001 acquisition at 6 domestic companies (14 out of a total of 16) and 4 overseas companies (26 out of a total of 35)
- (3) Held two committee and officer meetings for domestic group companies, and nine exchange meetings
- (4) Set up liaison committee for offices around the world (Feb. 2002)

Organization

The DENSO Environmental Committee, headed by DENSO's president, was set up to make possible an integrated approach to environmental problems from a regional to a global scale. It discusses and makes decisions on environmental protection policies, goals, and measures to be adopted by all DENSO Group companies.

Below the DENSO Environmental Committee there are five subcommittees that organize environmental activities.

Also under the DENSO Environmental Committee are the Business Group Environmental committees, the DENSO

Group (Domestic) Environment and Safety Committee and DENSO Group Overseas Regional Environmental committees, which are charged with the task of improving environmental management in a way that is compatible with consolidated management by ensuring that initiatives are implemented at all management levels in the DENSO Group.

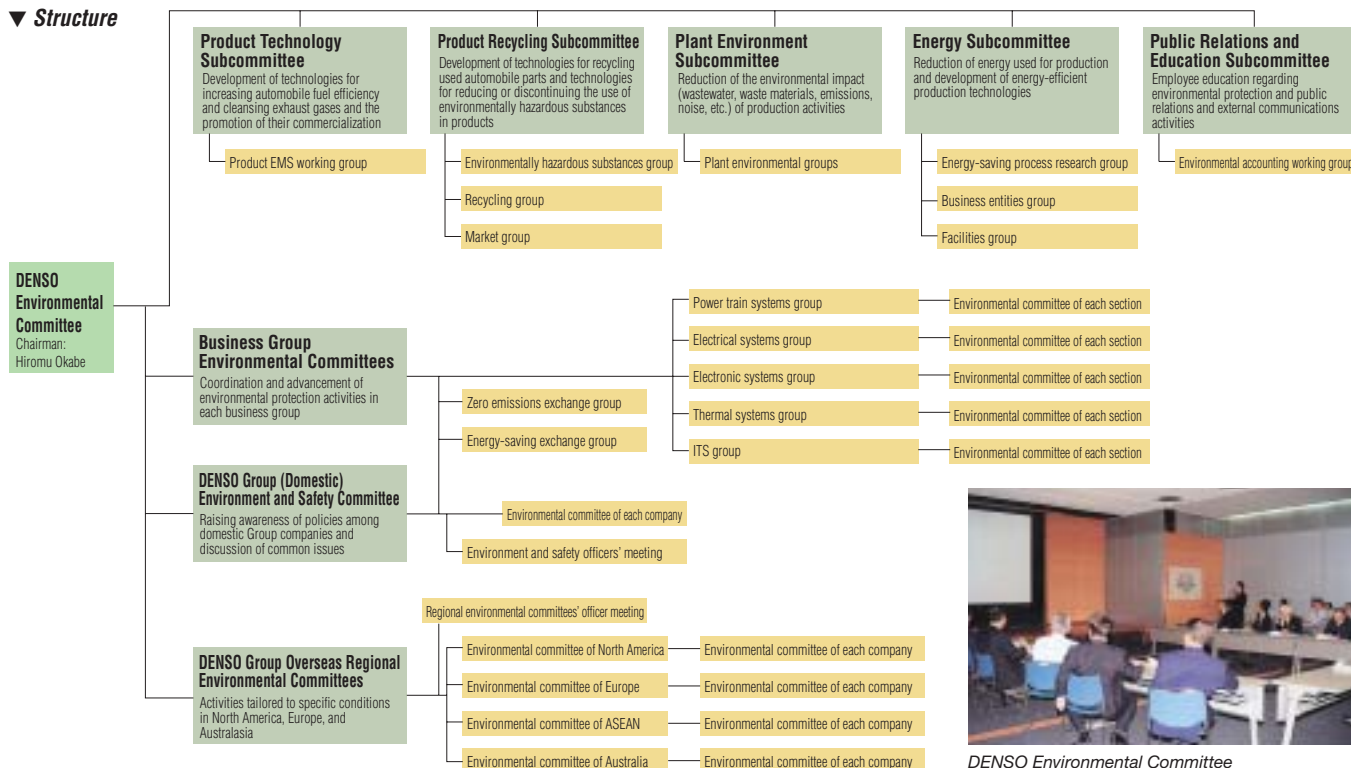
Bolstering Group Approaches

DENSO is committed to reinforcing environmental management that is compatible with consolidated management.

▼ COMMON GOALS FOR COMPANIES IN THE DENSO GROUP

	Domestic manufacturing companies	Overseas manufacturing companies	DENSO
Set up environmental management systems	ISO 14001 acquisition by fiscal 2002	Same	Completion of ISO 14001 acquisition by 1998
Product environmental pre-evaluations	Create product-specific criteria for evaluation	Same	Product EMS
Green procurement	Encourage use of DENSO Group Green Procurement Guidelines	Encourage adoption of guidelines based on those prevalent in host country or territory	Encourage Green Procurement
Waste reduction	Zero emissions by fiscal 2005	Encourage adoption of guidelines based on those prevalent in host country or territory	Zero emissions by 2003
Reduction of substances that have environmental impact at factories	<ul style="list-style-type: none"> • PRTR substances by 30% • VOCs (paint) 50% by fiscal 2005 	<ul style="list-style-type: none"> • VOCs (paint) 50% by fiscal 2005 	<ul style="list-style-type: none"> • PRTR by 30% • VOCs by 50%
Prevention of global warming	Reduction of CO ₂ emission volumes (set in-house targets)	Encourage adoption of guidelines based on those prevalent in host country or territory	<ul style="list-style-type: none"> • 10% CO₂ reduction by 2010
Rationalization of logistics	<ul style="list-style-type: none"> • Enhance transportation efficiency • Reduction of packing materials used (set in-house targets) 	Encourage adoption of guidelines based on those prevalent in host country or territory (2005)	<ul style="list-style-type: none"> • CO₂ stabilization • Reduce packing materials by 20%

▼ Structure



DENSO Environmental Committee

Environmental action plans are drawn up tailored to each company in the Group, based on the Groupwide declaration of Commitment, Basic Policies, and the Action Plan in DENSO EcoVision 2005. Each company in the Group pursues the seven common Group environmental goals and organizational improvements, such as the establishment of the DENSO Group Overseas Regional Environmental committees.

Wider Acquisition of ISO 14001 Certification

To increase the transparency of its environmental management, DENSO is aggressively moving to acquire ISO 14001 certification. By March 2002, all 56 domestic and overseas business locations had acquired certification in line with efforts to bolster environmental management on a consolidated basis. DENSO is preparing to acquire certification for the remaining 11 consolidated manufacturing subsidiaries.

▼ Progress in ISO 14001 Certification

	Acquisition completed by fiscal 2001	Acquisition scheduled for fiscal 2002	2003	2004 completion
DENSO	14 business locations	—	—	—
Domestic Group companies	ASMO (3 business locations) and 16 other business locations	2 companies	—	—
Overseas Group companies	26 companies	8 companies	—	1 company

Environmental Audits

DENSO is committed to the continuous improvement of environmental auditing by adopting Plan-Do-Check-Action cycle methods based on ISO 14001. In internal audits, teams composed of DENSO internal environmental auditors investigate each business location and where deficiencies are identified, and corrective measures are immediately taken. In its fiscal 2001 outside audit, DENSO was evaluated to be properly and efficiently operating its environmental management systems and achieving continuous improvement, even though some problems requiring further monitoring and oral guidance were noted in a few business locations.

▼ Main Issues Raised by Outside Audit

Item	Corrective action
At one section, procedures for emergency drills had not been updated	Revision of procedure, clarification in report of what action if any needs to be taken
No detailed description of how targets for activities are set	Detailed description of target setting process, and progress supervision
Uncertainty regarding some sites on checklist for environmentally sensitive installations needing daily inspection	Revision of checklist for each specific site inspected

Environmental Education

At DENSO, employees are encouraged to develop specialized knowledge concerning the environment and earn environment-related qualifications through educational programs, including compulsory courses tailored to the various job levels, courses for earning qualifications, and lectures. In fiscal 2001, approximately 2,856 employees attended a total of 3,358 hours of mandatory training. Additional voluntary and

regular training based on annual plans is carried out at each workplace, and the Company newsletter, magazine, and intranet environmental homepage are used as supplementary resources for educating and updating employees regarding environmental issues.

▼ Categories and Numbers of Employees Receiving Environmental Education

Category of Employee	Number
New recruits	562
Technical and mid-level employees	644
Assistant managers, group leaders	1,121
Section, department, plant, and other managerial staff	465
Managers of technical sections	64

*Does not include Group companies in Japan and abroad

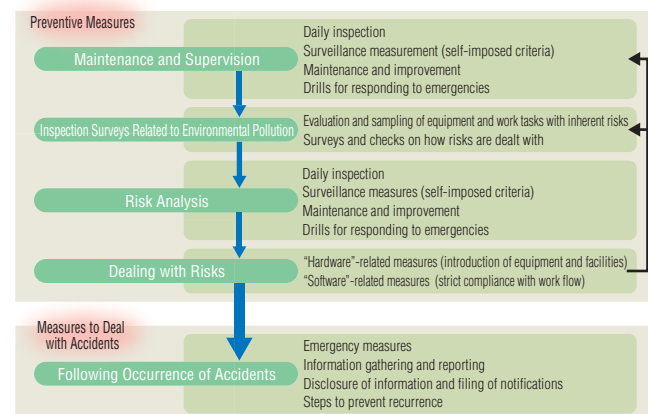
Environmental Risk Management

At DENSO, we work to manage environmental risk with the aim of taking preventive steps to avoid the degradation of the environment as a result of accidents and disasters. We define environmental risk to include “emissions of wastewater or gases that exceed self-imposed standards,” “accidents involving leakages of oil, chemicals, or other substances,” “pollution of the soil or underground water,” and “complaints from areas in the vicinity of our plants and other facilities regarding noise or other problems.” Preventive measures for equipment and facilities that have the potential of causing these types of environmental risk include making daily inspections and conducting surveillance measurements. To prepare for the possible occurrence of accidents, we have installed equipment for coping with emergencies and conducted training programs for dealing with such contingencies with the objective of minimizing damage.

At present, we are working to expand these preparatory measures to the entire DENSO Group. Especially, to strengthen measures for preventing oil leakages, we are upgrading emergency warning and priority early-action systems while systematically eliminating underground pipe conduits.

Please note that there were no accidents, violations, legal actions, or other environment-related incidents in fiscal 2001.

▼ DENSO's Environmental Risk Management System



Fiscal 2001 goals

- (1) Create standards for evaluation
- (2) Trial audit by segment and disclosure of findings

Fiscal 2001 achievements

- (1) Compiled DENSO environmental accounting guidelines
- (2) Compiled and released environmental accounts for establishment of recycling center

Environmental Accounting

The Significance of Environmental Accounting

DENSO regards environmental accounting as a tool for accomplishing the following three aims.

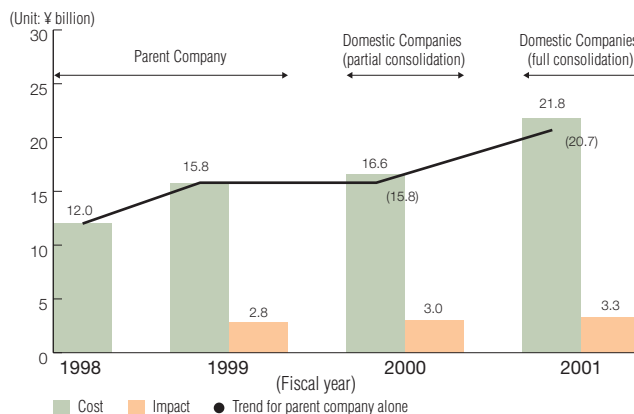
- (1) Identify costs and effects in quantitative terms, so that future environmental protection activities can be more effective and management decision making can be improved
- (2) Boost the motivation of employees to pursue environmental activities
- (3) Broadly disclose information to all parties affected by DENSO's activities of environmental impact, so that shareholders and suppliers, in particular, can develop a clearer understanding of DENSO's management.

Mindful of the need for both continuity and comparability, DENSO ensures that its environmental accounting categories are consistent with the environmental accounting guidelines (2002) established by the Ministry of the Environment. To further increase the effectiveness of environmental accounting, we have partially adopted the presumed effect method. In fiscal 2001, we created our own internal environmental accounting guidelines as an important tool for making environmental activities more compatible with consolidated management. ¹

Environmental Protection Costs in Fiscal 2001

Environmental protection costs in fiscal 2001, including for the first time, on a trial basis, calculations for domestic consolidated Group subsidiaries, totaled ¥21.8 billion. Of this

▼ Environmental Protection Cost and Value of Environmental Effect



sum, 95% (¥20.7 billion) was incurred by the parent company, and 5% (¥1.1 billion) by Group companies. Compared with parent-only figures for the previous fiscal year, environmental costs rose approximately ¥5.0 billion, consisting almost entirely of research and development costs.

Fiscal 2001 Environmental Effects

▼ Fiscal 2001 Environmental Protection Costs See page 34

Category of Environmental Cost		Investment (¥ million)	Expense (¥ million)
1. At business locations	Pollution prevention	584 (4.4)	169 (1.3)
	Reducing environmental impact from production activities	3,083 (23.2)	63 (0.5)
	Resource recycling	618 (4.6)	895 (6.7)
2. Upstream and downstream production activities		1,487 (11.2)	27 (0.2)
3. Management activities		2 (0.02)	667 (5.0)
4. R&D		1,422 (10.7)	12,608 (94.8)
5. Community activities		3 (0.02)	60 (0.5)
6. Compensation costs		0	98 (0.7)
Total		7,200 (54.1)	14,586 (109.7)
		Overall total: 21,786 (163.8)	

*Figures in () are US\$ million

A total of ¥3.3 billion was recorded as environmental effects in fiscal 2001. The principal material effects were proceeds from sales of recycled materials, waste reduction, and energy savings. Also partially recorded were presumed effects from increased awareness and PR activities. In line with legal requirements regarding presumed effects, we did not compute items such as incidental effects of avoidance of risk and of restitution/lawsuits and other potential costs. DENSO accounted for 94% (¥3.1 billion) of the effects, and Group companies for 6% (¥200 million).

Environmental Accounting by Segment

▼ Fiscal 2001 Environmental Effects See page 35

		Volume (unit/year)	Value of effect (¥ 100 million)
Actual effect	Proceeds of sale of recycled materials	93,513 ton	31.26 (23.5)
	Waste reduction	6,568.9 ton	—
Presumed and incidental effects		—	2.01 (1.5)
Total		—	33.27 (25.0)

*Figures in () are US\$ million

DENSO's segment environmental accounting totals the costs and effects of environmental protection projects at each of its business locations. In fiscal 2001, we included the activities of the Eco Plaza recycling center installed at the Anjo Plant.

DENSO will expand its use of segment environmental accounting in the belief that it will be useful for making investment decisions on new projects.

▼ Environmental Accounting for the Eco Plaza Recycling Center

	Costs		Effects	
	(¥ million)		(¥ million)	
Investments	5 (0.04)	Material effects	42 (0.32)	
Expenses	37 (0.28)	Presumed effects	10 (0.07)	
Total	42 (0.32)	Total	52 (0.39)	

*Figures in () are US\$ million

D evelopment and Design

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A WORLD LEADER



IN PRODUCT MANUFACTURING—CLOSE-UP VIEW

[Alternator]

DENSO's alternator incorporates a battery-charging device (generator) so it not only provides the power needed for the various electrical components in a car via the fan belt but also recharges the battery. DENSO's compact lightweight alternator, which has long led the industry in terms of environmental friendliness, helps prevent global warming by enhancing fuel efficiency. In fiscal 2000, DENSO also became the first company in the world to use an angular-type conductor in the starter, enhancing battery-charging efficiency approximately 10%. Since fiscal 1988, DENSO alternators have led the world market in terms of sales, achieving a 23% share in fiscal 2000.



Highlights of Fiscal 2001

Product EMS

Strengthening and Enhancing Product EMS

DENSO is strengthening mechanisms for the evaluation of the environmental soundness of new products at the design stage and has revised checklists for such evaluation on a product-by-product basis.

Exhaust Purification

Common-Rail System

DENSO's common-rail system using high injection pressure at 1,800 bar is a step toward meeting next-generation exhaust-emission standards for diesel-fueled vehicles.

Non-Automotive Products

Household Water Heater Using CO₂ Refrigerant (the recipient of the EPA Climate Protection Award)

This award was presented in recognition of DENSO's development and marketing of the world's first household water heater using CO₂ refrigerant.

Product EMS

Fiscal 2001 goal (1) Renewal of ISO 14001 certification for Development and Design Department

Fiscal 2001 achievements

- (1) Renewal of ISO 14001 certification for Development and Design Department
 - Revision and management of items recorded in the documents relating to environmental pre-evaluation plan

Product EMS at DENSO

As a leading manufacturer of automobile parts, DENSO supplies automakers with many products to support automotive functions.

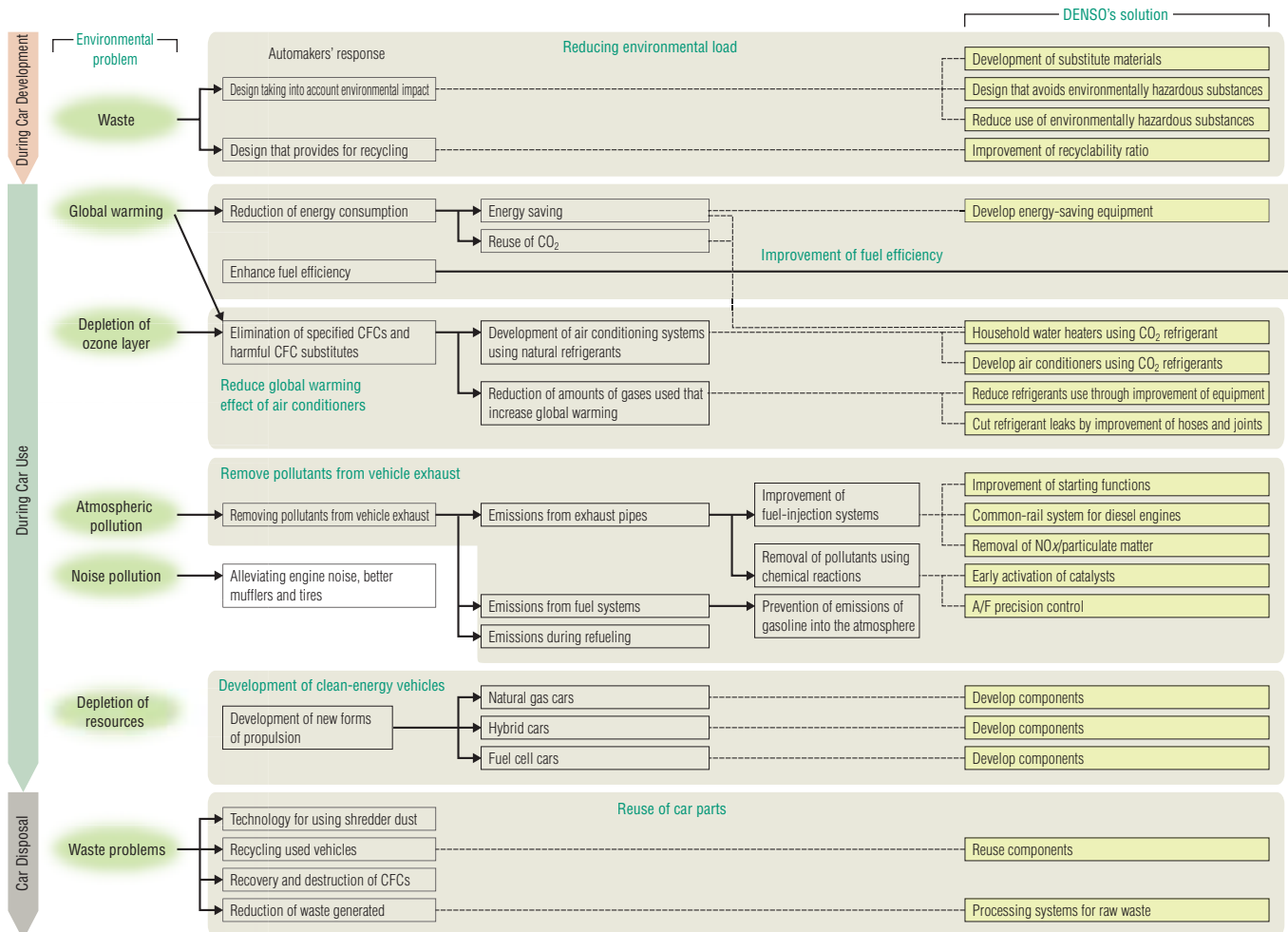
To minimize the impact on the environment at every stage of the life cycle of the product—materials procurement, manufacture, use, disposal, and recycling—DENSO believes it is important to act at the product planning, development, and design stages. DENSO's product environmental management

system (EMS) method gives a prior evaluation of the environmental soundness of a product under development at the design stage, which of all the stages from planning to production is where environmental impact can be predicted with a high degree of accuracy (see *Processes of Product Development chart page 13*). The work flow has been incorporated into Company regulations under the title of "Regulations for Initial Flow Control" and now constitutes a system for enabling continuous improvements to be made.

Product EMS at the Planning, Development, and Design Stages

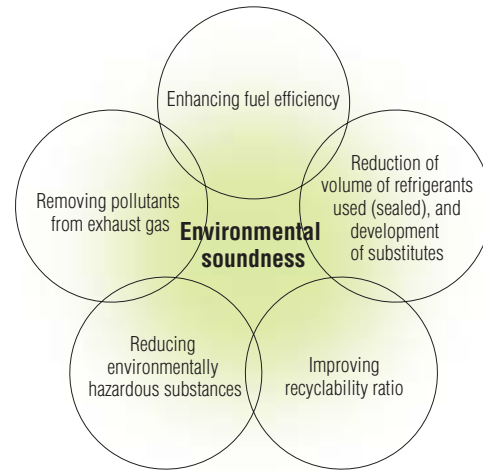
As part of DENSO's long-term strategy for each product, the Company draws up a medium to long-term prognosis at the planning stage laying down precisely the function of the product and how long production will be continued. Based on this practice, specific plans are shown to automakers at the concept development stage of every new product.

▼ Automobiles, Environmental Impact, and DENSO Products

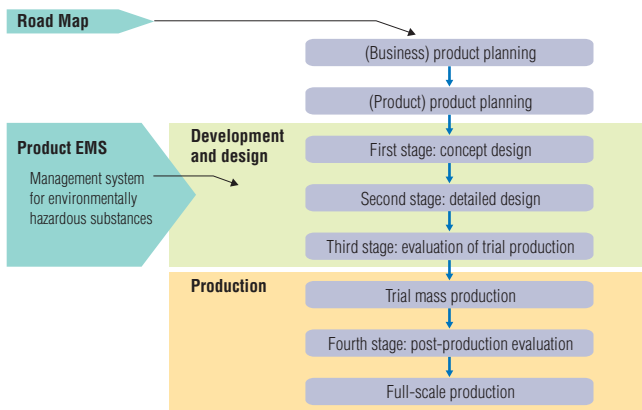


Once an automaker has decided to use a new product, DENSO begins the development process and determines its design, functions, quality, price, and environmental characteristics. After preparatory, initial, and secondary quality assurance meetings, a prior evaluation of progress toward target levels is held (see *Processes of Product Development chart below*).

“Environmental soundness” is mainly assessed by applying the five yardsticks listed at right to each product.

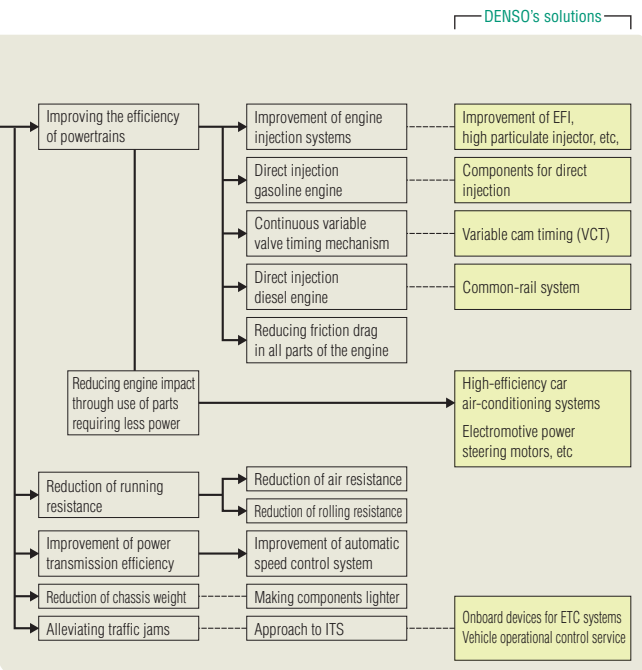


▼ **Processes of Product Development**

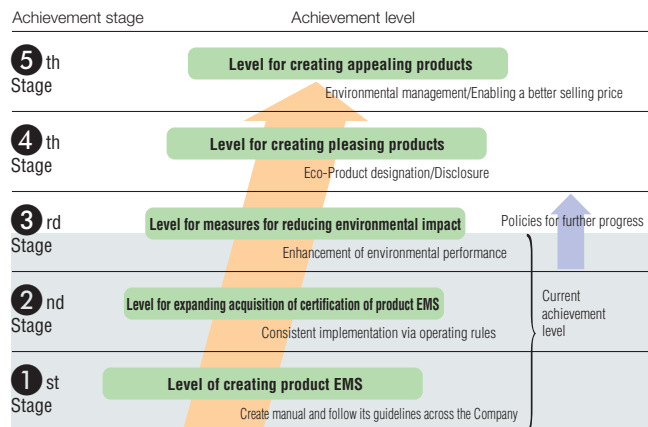


Strengthening and Enhancing Product EMS

In fiscal 2001, DENSO began setting targets in advance for every new product (reducing weight by 50g, total abolition of hexavalent chrome, etc) in order to focus more on stages three and four of the chart below—Product EMS and Status—and revised its prior evaluation procedures so as to be able to monitor progress in target achievement. DENSO has completed the introduction of product EMS at all its companies, and in October 2001 received ISO 14001 accreditation for the Development and Design Department.



▼ **Product EMS Stages and Status**



Green Procurement

Fiscal 2001 goal

- (1) Compilation of plan for EMS establishment at each supplier
- Beginning of operation of EMS

Fiscal 2001 achievements

- (1) Of approximately 908 suppliers targeted by DENSO, 38% have completed the establishment of EMS
- Held explanatory meetings regarding measures for environmentally hazardous substances used in finishing processes

Green Procurement at DENSO

DENSO procures a variety of parts and materials, including subsidiary materials*, from numerous suppliers for use in manufacturing operations. It is working to reduce environmental impact at all stages of its business activities, which requires not only improvements to DENSO's own operations but also the procurement of environmental-friendly parts and materials from environmentally aware suppliers. DENSO is working to achieve this goal under its Green Procurement Policy.

* *Subsidiary materials: Substances not included in the product*

Green Procurement Guidelines

Under DENSO's Green Procurement Guidelines,¹ suppliers are required to meet the following two conditions.

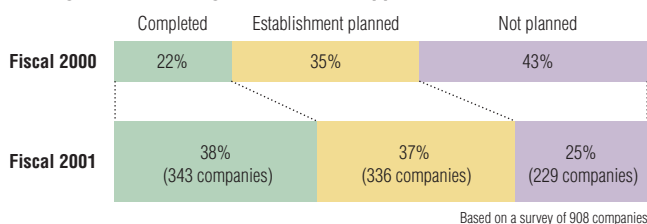
- The establishment of an EMS by fiscal 2003, based on the achievement of external accreditation under the ISO 14001 standard
- The reporting of all chemical substances included in parts and materials, and the quantities present at time of adoption

Strengthening Links with Suppliers

As of March 31, 2001, progress in encouraging suppliers to set up EMSs was as shown in the chart below—*Progress in Creating EMSs at 908 Suppliers*.

Suppliers that have not yet acquired ISO accreditation are required by DENSO to compile and submit annual self-evaluations based on DENSO's proprietary environmental management evaluation checklist. In addition, DENSO held an explanatory meeting for suppliers in June 2001 concerning

▼ Progress in Creating EMSs at 908 Suppliers



the Ecostage concept designed to encourage the introduction of EMSs at suppliers, and provided guidance on measures for environmentally hazardous substances used in surfacing processes.

* *Ecostage: A system of self-evaluation developed by UFJ Management System Institute Ltd., to support corporate environmental activities. It provides continuous support for construction and operation of EMSs simpler than those using ISO standards and for the improvement of environmental performance.*

Managing and Reducing Environmentally Hazardous Substances

As part of its efforts to reduce the amount of environmentally hazardous substances in its products, DENSO has developed the Material Chemical Assessment System (MACAS)* database, which is used to store and retrieve information about chemical substances in parts and materials, as reported by suppliers. The MACAS system allows DENSO to respond immediately to requests from government agencies and customers for the disclosure of product specifications and composition, including chemical substances.

* ⇒  See page 17

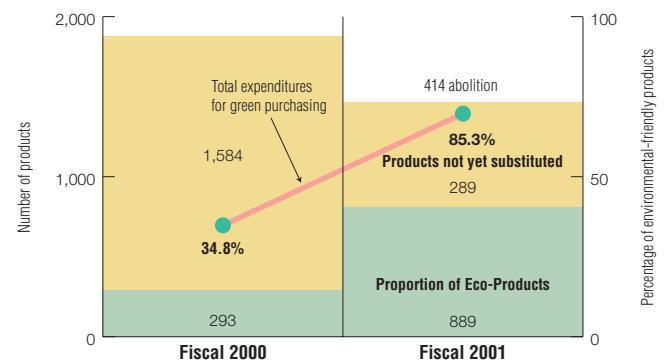
Green Purchasing

In addition to raising awareness and encouraging the adoption of Eco-Products in purchasing of office-use equipment for administrative sections, DENSO is enhancing disclosure by newly adopting and cataloging Eco-Products and posting a green purchasing site on its intranet detailing Eco-Products. In this way, office workers can study the Eco-Products and choose the appropriate one.

Records of green purchases made in February 2001, September 2001, and March 2002 show that the value and number of Eco-Products acquired have increased steadily. DENSO will continue to expand its purchasing of environment-friendly products.

* *The catalog lists eco-mark products approved by the Japan Environment Association and items listed in the Environment Data Book published by the Green Procurement Network.*

▼ Progress in Green Purchasing



Improving Fuel Efficiency

Fiscal 2001 goal (1) Development of technologies in anticipation of next-generation fuel-efficiency regulations

Fiscal 2001 achievements

- Developed ISG for hybrid cars
- Developed control system for adjusting car air-conditioner compressors to driving conditions

Approaches to Improvement of Fuel Efficiency

Japan's target for reducing emissions of carbon dioxide was set at 6% at COP3 (the Kyoto Protocol) in December 1997. Fuel efficiency standards will be implemented in order to achieve this target. From the standpoint of an automobile parts manufacturer, DENSO is developing the following new technologies and products in response to new fuel efficiency standards (diesel vehicles in 2005, gasoline vehicles in 2010) and the voluntary numerical targets of the automakers.

- (1) Enhancement of fuel efficiency (increased efficiency of power train, lower running resistance, improvement of power transmission, vehicle weight reduction)
- (2) Supporting the development of clean-energy cars (development and commercialization of products for next-generation vehicles such as hybrid cars and fuel cell cars)
- (3) Development of equipment for ITSs (electronic toll collection systems, etc.) to help prevent traffic jams.

Products that Enhance Fuel Efficiency

ISG for hybrid cars and mild hybrid cars

In July 2001, the "Estima hybrid" car, which is built by Toyota Motor Corp., used DENSO's compact belt-type ISG, a market-leading product intended for mass produced cars that combines both starter and alternator. It was also adopted in the "Crown Mild Hybrid," the world's first mild hybrid car. In the "Crown Mild Hybrid," a special anti-idling function causes the engine to stop automatically when the vehicle

is stationary. The ISG drives the car air conditioning compressor even when the car is stationary, and restarts the engine instantaneously when the vehicle is ready to move. In addition, fuel consumption is kept to a minimum by the incorporation of an energy regeneration system* that recovers braking energy at times of deceleration.

* *Energy regeneration system: When the fuel injection system of the engine stops during periods of deceleration, the ISG converts the momentum in the vehicle into electrical energy and collects it in the battery.*

Control system for adjusting car air-conditioner compressors to actual driving conditions

Car air-conditioner compressors operate by harnessing the power of the engine. A control system usually switches the compressors off temporarily at times of acceleration to reduce the load on the engine.

With the energy-saving air conditioning compressors developed by DENSO, compressor power can be increased or decreased at any time by outside signals. As a result, it is possible to increase the frequency of intervention by the control system compared with conventional products during acceleration to match actual driving conditions. In addition, there is no impairment of cooling functions and fuel efficiency is enhanced, as fuel is cut off for longer periods due to the reduction in the power requirement during deceleration.

Car air conditioning compressors, including this control system, were adopted for use in Toyota's "Allion" and "Premio" models in December 2001.



ISG for mild hybrid car



Inverter for mild hybrid car



Car air conditioning compressor incorporating adjustment control unit

Exhaust Gas Purification

Fiscal 2001 goal

(1) Development of technologies to meet next-generation exhaust emission standards in Japan, Europe, and the United States

Fiscal 2001 achievements

- Gasoline-fueled vehicles: Developed electronic throttle with new built-in non-contact-type sensor
- Diesel-fueled vehicles: Developed common-rail system using high injection pressure at 1,800 bar
Developed DPF filter for exhaust purifiers

Approaches to Exhaust Gas Purification

Internal combustion engines release four types of pollutants: hydrocarbons, nitrogen oxides (NO_x), carbon monoxide (CO), and particulate matter*. They are generally emitted from the exhaust and fuel system, or appear as vapor during refueling.

DENSO's response to these problems has been the improvement of fuel injection systems and pollutant removal by chemical reaction, so that vehicles meet Japanese, U.S., and European exhaust emission standards.

* Particulate matter: Particulates such as dust and smoke included in exhaust

Products

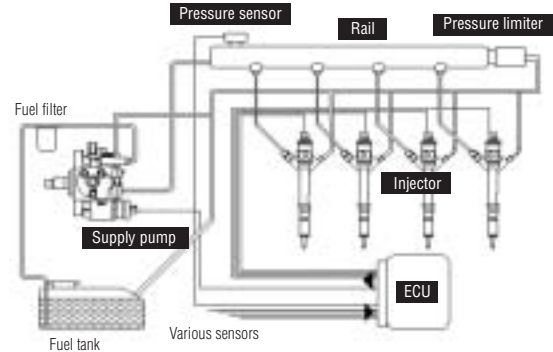
DPF filters for exhaust-purifying devices for diesel-fueled vehicles

DENSO's DPF filters for exhaust-purifying devices for diesel-fueled vehicles incorporate thousands of 1mm x 1mm square perforations. These are able to trap particulate matter and exhaust gases from the engine and simultaneously purify trapped particulate matter and NO_x by the use of a catalyst in the filter. The efficiency of particulate matter filtration is enhanced by reduced airflow resistance when the exhaust passes through the filter.

Common-rail system for diesel-fueled engines

In the common-rail system, pressurized fuel is pumped to the common rail for storage and is injected by an electronically

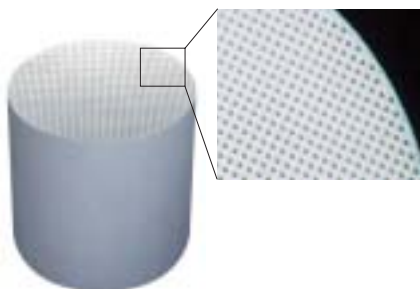
▼ Common-Rail System



controlled injector at the optimal time regardless of the rotary speed of the engine. In DENSO's new common-rail system, injection pressure can be raised by electronic control to a maximum of 1,800 bar (compared with 1,450 bar in conventional systems) and control takes place through a five-stage injection process. Ultrahigh-pressure injection and multistage injection greatly reduce emissions of particulate matter and NO_x in exhaust gas and contribute to quieter combustion.

Electronic throttle for gasoline-fueled engines

Mechanical throttles are opened and closed directly by wire cable attached to the accelerator pedal. The electronic throttle, which can freely control the degree of throttle opening, improves fuel efficiency by ensuring optimal throttle opening for various different driving conditions, contributing to reduced exhaust emissions. The new electronic throttle developed by DENSO with built-in non-contact-type sensors was used by Toyota in its new "Windom" series in August 2001.



DPF filter for diesel engine emissions



Supply pump for common-rail system (light trucks, cars)



Injector for common-rail system



Electronic throttle for gasoline-fueled engines

Reducing Environmentally Hazardous Substances

Fiscal 2001 goals

- (1) Expansion and revision of list of substances requiring special management
- (2) Shift to alternative substances to those restricted under European vehicle scrapping regulations

Fiscal 2001 achievements

- Cooperated with JAMA in compiling a unified list of environmentally hazardous substances and unified research formats
- Began shift to substitutes for hexavalent chromes and other surfacing materials

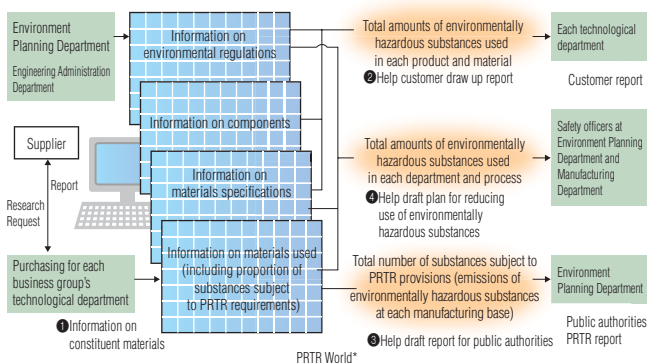
Policies for Reducing Environmentally Hazardous Substances

DENSO aims to ensure that its products are basically free of environmentally hazardous substances, such as mercury, hexavalent chromes, cadmium, and lead. Its efforts in this regard go beyond Japanese and overseas regulations, being comprehensive from the design and materials procurement stages and taking into account the environmental protection activities of the customer and the automaking industry. DENSO divides the environmentally hazardous substances it uses into two groups: 26 primary substances that it plans to either reduce or end the use of, and 60 secondary substances for which decisions on use of are made under supervision. In both cases, systematic efforts are being made to manage and reduce use.

The MACAS Database of Environmentally Hazardous Substances

Among substances now listed as being environmentally hazardous are certain newly classified substances whose impact on the environment had previously not been clearly established. In light of such difficulties regarding clarification, it is necessary to understand precisely which of the enormous number of chemical substances DENSO uses are environmentally hazardous and are present in which products and materials. By enabling the comprehensive and efficient management of materials used in products and their constituent parts, DENSO's MACAS database supports continuous management and reduction of substances of environmental impact.

▼ The MACAS System—an Organizational Overview

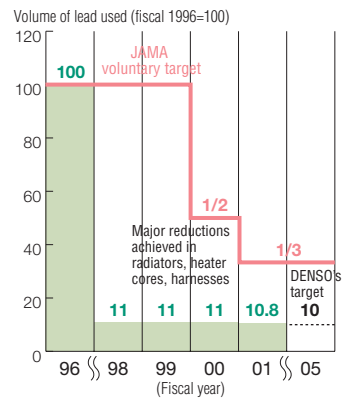


* PRTR World: ASP is a service that helps companies manage substances subject to PRTR reporting requirements and supports the drafting of reports for public authorities. The company, Ecoresearch, was set up by Toyota Motor Corp. and Hitachi, Ltd., with the capital participation of DENSO.

Progress in Reducing Environmentally Hazardous Substances

The primary substance group consists chiefly of lead, cadmium, hexavalent chrome, and mercury. Lead in particular is used in many products and materials, and it is sometimes difficult to reduce or avoid its use without impairing product function. However, DENSO is endeavoring to develop substitute technologies for each and every product and material using these substances (see *Development of Substitute Technologies to Reduce Environmental Impact chart below*).

▼ Voluntary Numerical Targets for Reduction of Lead Use in the Automaking Industry, and DENSO's Lead Use



▼ Development of Substitute Technologies to Reduce Environmental Impact

	Product Type	Used in	Progress as of Fiscal 2001	
Lead	Solder	Copper radiators	No longer used since 1998	
		Copper heater cores	No longer used since 1998	
		Electrical components	Changeover to substitute materials under way	
		Circuit boards, etc.	Technology under development	
	Electrodeposition paint	Coated components	Changeover to substitute materials under way	
	Ferrous, nonferrous metals	Free-cutting steel, etc.	Technology under development	
	Lead-plated steel	Solder-plate steel	Technology under development	
	Sliding materials	Axle bearings, etc.	Technology under development	
	PVC	Wire harnesses, etc.	No longer used since 1998	
	Rubber	Rubber parts	Changeover to substitute materials under way	
Cadmium	Contact materials	Contact components	Changeover to substitute materials under way	
		Glass paste	Ceramic substrates	Changeover to substitute materials under way
	Hexavalent chromes	Surface treatments	Plated parts, etc.	Changeover to substitute materials under way
		Mercury	—	Fluorescent tubes

Substitutes for hexavalent chrome in surfacing treatment

DENSO began reducing the use of hexavalent chromes, which are used in galvanization and other technologies for preventing rust but which has carcinogenic properties and can cause dermatitis, at an early stage.

Development of a substitute agent was completed in 2001, and trials for mass production have been carried out at the galvanizing line of the Nishio Plant. Production for European customers began in March 2002.



Recycling

- Fiscal 2001 goals**
- (1) Raise recyclability ratio to 92.5%
 - (2) Development of materials recycling technologies
- Fiscal 2001 achievements**
- (1) Raised recyclability ratio to 96.9%
 - (2) Established composite recycling technology for nylon 66

Enhancing Recyclability

Based on the targets in the "Used Automobile Recycle Initiative" of the Ministry of Economy, Trade and Industry (formerly the Ministry of International Trade and Industry) and JAMA's voluntary programs, DENSO's Product Recyclability Evaluation Method is a significant contribution by an autoparts manufacturer to increase recyclability ratios.

Creating Recycling Technologies

Recycling radiator end tanks

Nylon 66 radiator end tanks can be recycled by pulverization. However, because the material is severely degraded, the scope for reuse is limited and the majority ends up in landfills. In partnership with DuPont Engineering Polymers of the United States, DENSO is developing a new recycling technology for nylon 66 radiator tanks, and successful recycling has already been achieved at a pilot plant constructed in 2001. Evaluations are currently under way.



Pilot plant for composite recycling at Mississauga, Ontario, Canada

Recycling printed circuit boards

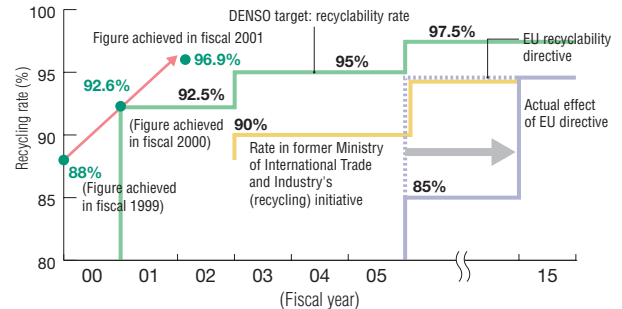
Multilayered printed circuit boards consisting of surface-mounted substrates for use in mobile phones and large computers are very difficult to recycle because of the use of heat-curable resin* used in the base materials. Furthermore, because different manufacturing methods are used, multilayering to a great depth is difficult. DENSO's answer to this

▼ Targets in Former Ministry of International Trade and Industry's Recycling Initiative

Recycling rate	2002 and later	2015 and later
Used automobiles (by weight)	At least 85% recycled	At least 95% recycled
Landfill (by volume)	3/5 of 1996 levels	1/5 of 1996 levels
New vehicles	Minimum 90% recyclability	—

Amounts of harmful substances used	By end of 2000	By end of 2005
Lead (by weight) (excluding batteries)	1/2 of 1996 overall levels	1/3 of 1996 overall levels

▼ Recyclability Rates for DENSO Automotive Products



problem is the Patterned Prepreg Lay Up Process board, which uses thermoplastic resin** as its base material. This means that recycling is possible simply by removing the resin. In addition, a high degree of multilayering is possible, making it ideal for use in ultra-high density multilayered boards and similar products needed for mobile phone base stations and similar equipment.



* Heat-curable resin: Resin that hardens with heat and does not return to its original state
 ** Thermoplastic resin: Resin that dissolves under heat, so it is easy to recycle

DENSO Eco Service Stations

DENSO-designated service stations, which offer vehicle inspection, repair, and other services at 148 locations, contribute to resource conservation through product reuse. From September through December 2001, an environmental campaign including environmental inspection and improvement activities was held at these stations to raise environmental awareness and contribute to local communities.

At the start of the campaign, a list of items for improvement (for example, the recovery and destruction or disposal of CFCs used in car air conditioners, and the treatment of industrial waste) was drawn up for each service station. The 69 stations that achieved perfect scores by the end of December were designated DENSO Eco Service Stations. In the future, DENSO plans to conduct similar annual evaluations of approximately 800 locations including DENSO's wholly owned franchises.



Reducing the Environmental Impact of Refrigerants

Fiscal 2001 goal (1) Commercialize air conditioning systems using new CO₂ refrigerant

Fiscal 2001 achievement (1) Increased research into more reliable, safer methods of mass production

Approaches to Reducing the Environmental Impact of Refrigerants

Increasingly, car air conditioners are switching over to CFC-substitute refrigerants, such as HFC134a, which do not harm the ozone layer. Unfortunately, HFC134a has been found to exacerbate global warming, therefore, DENSO is working out ways to shift to natural refrigerants using CO₂ and hydrocarbons that do not contribute significantly to the greenhouse effect.

Mindful of the need to minimize the impact of refrigerants on global warming, DENSO, as a leading manufacturer of car air conditioners, is cutting its use of harmful refrigerants by upgrading air conditioning equipment, and introducing CO₂ as a refrigerant. In addition, the Company supplies refrigerant recovery and recycling equipment for specified CFCs (HCFCs).

* HFCs: Hydrofluorocarbons

** HCFCs: Hydrochlorofluorocarbons

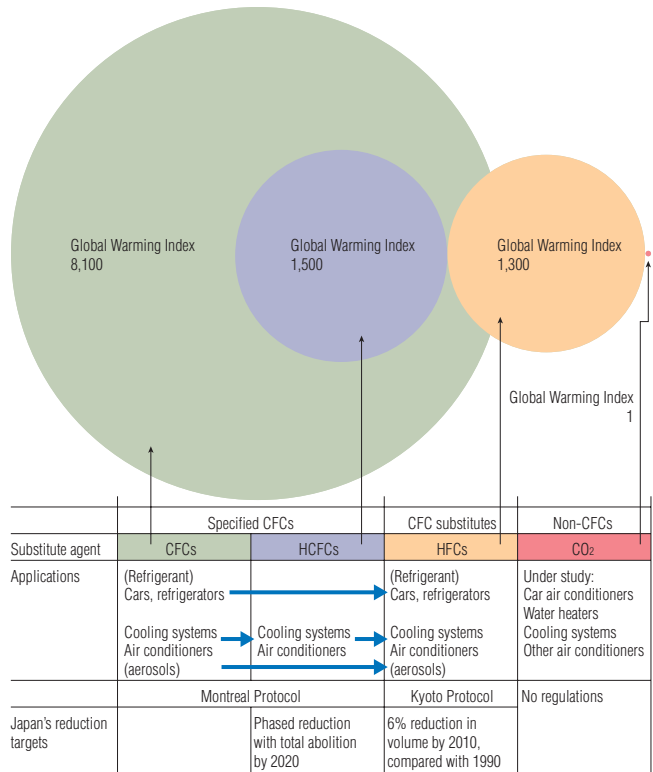
Natural Refrigerant Air Conditioners

In June 2001, DENSO's electromotive heating pump-type air conditioning system using a CO₂ refrigerant was installed in the first public road trial vehicle of Toyota's fuel cell hybrid vehicle "FCHV-4,"* the first of its type in the world. This system is easy to install in specialized vehicles such as fuel cell cars. DENSO will develop future applications in general gasoline- and diesel-fueled vehicles after various reliability and safety

improvements have been made. DENSO supports the efforts of public organizations and industry to make available the necessary equipment to create the infrastructure for the wider adoption of CO₂ refrigerant in air conditioners.

* FCHV: Fuel Cell Hybrid Vehicle

▼ Comparison of Global Warming Indexes, and Japan's Reduction Targets



Source: Environmental Overview

Environmental Measures for Non-Automotive Products

Non-Automotive Products

Industrial equipment, such as communications equipment, industrial robots, and bar-code readers; environmental equipment, such as household water heaters using CO₂ refrigerant; and other non-automotive products derived from core auto technologies account for 5.9% of DENSO's sales.

Household Water Heater Using CO₂ Refrigerant

In May 2001, DENSO began supplying to house construction companies on an OEM basis CO₂-cooled household water heaters developed jointly with Tokyo Electric Power Co., Inc., and the Central Research Institute of Electric Power Industry.

Use of natural refrigerant CO₂ as a medium in the cold cycle makes this system superior in energy efficiency and harmless to the ozone layer. In addition, because CO₂ generated during DENSO's manufacturing processes can be reused, emissions of greenhouse gases are curtailed.



Receiving the Environmental Protection Agency (EPA) Climate Protection Award

Recovery and Destruction of CFCs from Car Air Conditioners

CFCs: A Cause of Global Warming, and a Danger to the Ozone Layer

Of the many threats to the global environment now emerging, the destruction of the ozone layer and global warming are considered especially serious. CFC (Freon) gases are a major cause of these problems.

CFCs are artificial compounds that are invisible, colorless, odorless, and nonflammable. Because they are also chemically stable, they found numerous applications before the dangers they pose to the environment were identified. The applications included semiconductor cleansing agents, aerosol propulsion agents, and refrigerants for refrigerators and cooling systems. However, after it became clear that CFCs damage the ozone layer and exacerbate global warming when discharged into the atmosphere, developed countries worldwide committed themselves to limiting their use under the terms of the Montreal Protocol (1987)* and the Kyoto Protocol (1997)**.

Mandatory Recovery and Destruction of CFCs

Car air conditioners long used the specified CFC (CFC12) as a refrigerant, but production of this substance was wholly abolished in 1995 in developed countries worldwide for environmental

reasons, and the CFC substitute HFC134a was used instead. However, although this CFC substitute did not harm the ozone layer, it was found to exacerbate the greenhouse effect, considered responsible for global warming. To prevent emissions into the atmosphere, CFCs of this type must therefore be reused or destroyed after their recovery from end-of-life automobiles or during car repair work. Legislation in developed countries mandating recovery and destruction of CFCs has been enacted, but in developing countries in Asia and elsewhere, specified CFCs are still in use.

In Japan, the CFC Recovery and Destruction Law was enacted in June 2001, as a measure to protect the ozone layer and help prevent global warming. In April 2002, the discharge of CFCs from car air conditioners into the atmosphere was prohibited and the recovery and destruction of CFCs became compulsory.

DENSO and CFCs

In partnership with JAMA and the Japan Auto Parts Industries Association, DENSO has helped establish a common system for the recovery and destruction of the car air conditioner refrigerants CFC12 and HFC134a.

Under this system, CFCs from end-of-life automobiles brought in by their users are recovered at dealerships and other sales outlets. The dealerships have two options for the recovery of CFCs, depending on whether one-liter canisters or large 21-liter canisters are used (see the chart). If the CFCs are recovered in one-liter canisters they are taken to one of three DENSO facilities in Tokyo, Osaka, and Hiroshima, which cover Honshu and Shikoku, and their contents are transferred to 21-liter canisters for final disposal. This system ensures that CFCs can be efficiently processed at the nearest facility.

CFCs were transferred from approximately 150,000 one-liter canisters at these three facilities from January 1998 to March 2002. Currently, the total volume of one-liter canisters processed at the three facilities accounts for one-third of the total disposal of CFCs nationwide. DENSO is also developing a proprietary final disposal solution for CFCs from refrigerators and other cooling systems.

CFC Recovery During Auto Repair and Maintenance

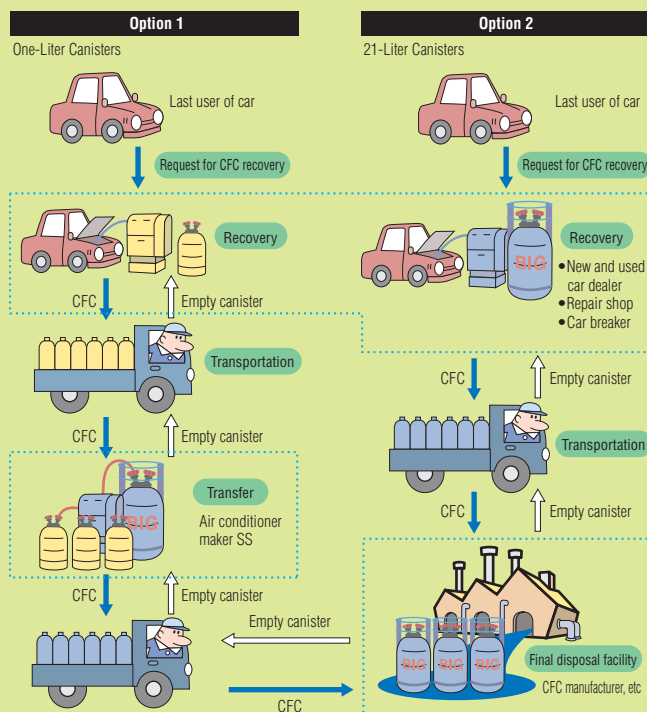
DENSO has been developing CFC solutions since 1990, with efforts including the distribution of refrigerant recycling and recovery equipment to all DENSO service stations and dealerships nationwide. Approximately 13,000 recycling and recovery systems for specified CFCs have been given to these stores, of which approximately 7,000 can also handle CFC substitutes. DENSO recovers CFCs not only from end-of-life cars, but also during repairs and inspections. These recycling and recovery systems comprise an integral part of the overall infrastructure for dealing with CFCs.

DENSO will maintain its commitment to protecting the ozone layer and preventing global warming by combating the problem of CFCs.

* An international framework for deciding regulatory measures for the restriction of the production of substances that endanger the ozone layer.

** A protocol to the Framework Convention on Climate Change, setting emissions targets for greenhouse gases such as CO₂.

▼ Recovery and Destruction of CFCs



CFC transfer equipment



Refrigerant recycling and recovery system

Clean Factory Activities

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A WORLD LEADER



IN PRODUCT MANUFACTURING—A CLOSER LOOK

[**Combination Meter**]

A combination meter is a single-case system incorporating a speedometer, a fuel gauge, a water temperature gauge, and other devices. DENSO's combination meter, incorporating world-leading technologies such as digital meters and an optitronometer (a luminescent meter in which the needle itself emits light), has led its market since 1988 and in 2000 had a 15% global share. In 2001, the 200 millionth unit was assembled.

Drawing on its expertise in electronic control systems, DENSO plans to develop an information display system that gives the driver important driving information such as fuel consumption, distance traveled, and route data.



Highlights of Fiscal 2001

Resource Conservation and Zero Waste

System for measuring and analyzing total waste volumes

The Eco-Manage System developed and commercialized by DENSO enables the measurement of volumes of waste generated by each department.

Energy Conservation

The Perfect Energy Factory concept

Perfect Energy Factory trial activities have commenced at seven plants with the goal of maximizing energy efficiency from supply to consumption.

Fiscal 2001 goals

- (1) Development of recycling technologies for intractable waste
- (2) Development and trial of measuring and analysis system for overall waste generation volumes

Fiscal 2001 achievements

- (1) Completed development of recycling technologies
 - Zero waste achieved at Hiroshima Plant in August 2001 (bringing total of business locations with zero waste to 3 out of 14)
 - Successful development of weighing and analysis system for overall waste generation volumes

Zero Waste

DENSO aims to reduce to zero the volumes of waste sent to landfills* for disposal at its 14 manufacturing bases in Japan by fiscal 2003. Zero waste was achieved in fiscal 2000 not only at the Anjo Plant, a model facility, but also at the Kitakyushu Plant, and, in fiscal 2001, at the Hiroshima Plant. At other business locations, DENSO in fiscal 2001 virtually completed the development of recycling technologies for the majority of remaining waste materials, and expects to have eliminated all need for the use of landfills during fiscal 2002.

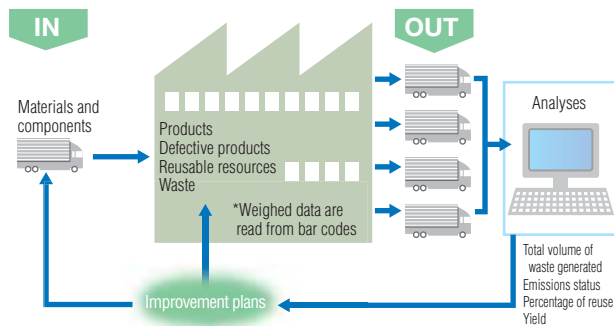
These successes enabled DENSO to record a 90% decrease in fiscal 2001 in overall volumes of waste generated compared with fiscal 1990, to 2,100 tons. The recycling ratio rose by over 5% in fiscal 2002 to 97%.

* Waste sent to landfills consists of industrial and general waste (excluding inverse contracted recycling); volumes treated at landfill sites, with or without prior incineration and other pretreatment, were kept to less than 1% of 1999 levels.

Reduction of Overall Waste Volumes

To curb waste at source, DENSO is developing ways to reduce its generation at each stage of the production process. These include the modification of certain materials and product dimensions at the design stage, the introduction of energy-saving technologies that refine methodologies and optimize operating conditions at the process and design stage, and meticulous improvements at the production stage, such as reducing the number of defective items and eliminating unnecessary procedures.

Resources Recycle Communication System (RrECS)



Comprehensive Management System for Waste and Resources ¹

RrECS, developed as a means of managing waste and reducing its generation, was put into trial operation at the Anjo Plant in August 2001. This system efficiently covers procedures from the integrated management of waste and resources to the issue of publications and compilation of reports for public and other authorities, and helps to reduce waste-processing costs, improve the conversion of resources into usable products, and enhance the efficiency of operations. In December 2001, the package was commercialized under the name Eco-Manage.

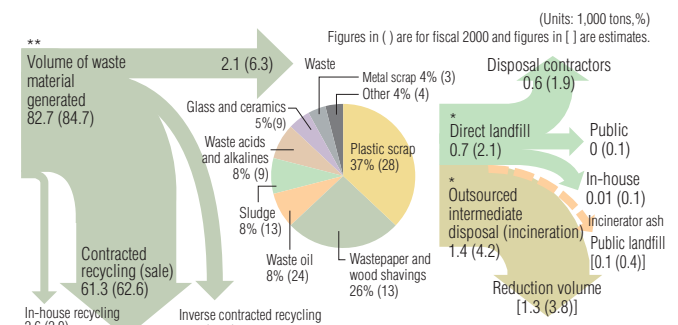


The Eco Plaza Recycling Center ¹ See page 10

DENSO's Eco Plaza is intended for concentrated small-lot product recycling and the improvement of the efficiency of transportation and delivery operations. Eco Plaza facilities were established at the Anjo Plant in fiscal 2000, and at the Nishio Plant, Kota Plant, and DENSO headquarters in 2001. Installations at other factories are scheduled in fiscal 2002.

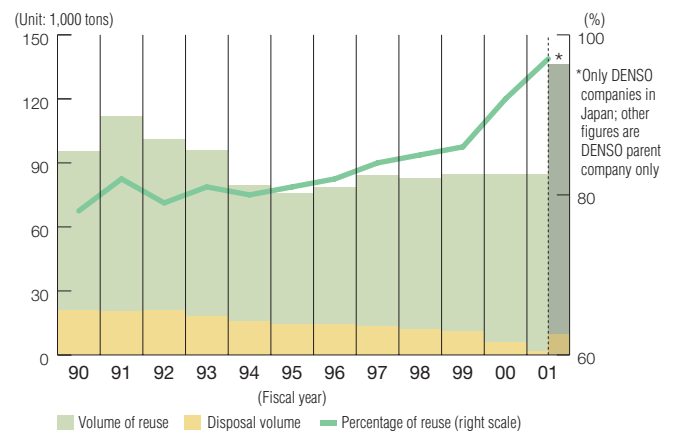


Progress in Waste Product Processing (Fiscal 2001, Excluding Domestic Group Companies)



*Covered by zero waste policies **Covered by initiatives to reduce total amounts of waste generated

Waste Generated and Percentage of Reuse



Energy Conservation

Fiscal 2001 goals

- (1) CO₂ emissions: 107, assuming 1990 is 100 (versus 112 if no action is taken)
- (2) Reduction in CO₂ emissions: 28,200 tons of CO₂ a year

Fiscal 2001 achievements

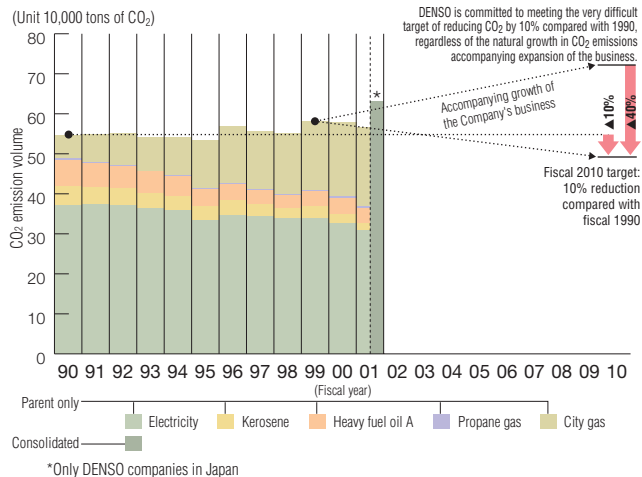
- (1) CO₂ emissions: 104, assuming 1990 is 100
- (2) Reduction in CO₂ emissions: 29,700 tons of CO₂ a year

DENSO's CO₂ Reduction Plan

To achieve the EcoVision goal of reducing CO₂ emissions from manufacturing bases by 10% compared with fiscal 1990 levels by fiscal 2010, DENSO is pursuing policies based on the development of energy-saving technologies, cogeneration, and the Perfect Energy Factory concept. In fiscal 2001, DENSO easily met its targets for total CO₂ emission volumes and reductions. In fiscal 2002, the Company plans even deeper cuts by revising the initial target of 105 (base year 1990=100) to 102 or less.

 See page 36

▼ CO₂ Emission Volumes at Manufacturing Plants, and Targets for Fiscal 2010



Developing Energy-Saving Technologies

DENSO's efforts to develop energy-saving technologies are centered on the Energy-Saving Processes Research Institute. In fiscal 2001, DENSO pursued technological research in 30 areas, including cold forging with reduced or no cutting, dry-process cutting and grinding, and low-pressure die-casting. Eight patent applications were submitted for new energy-saving technologies or improvements to existing ones.

Cogeneration and New Energy Sources

Cogeneration is a highly efficient energy source that makes possible major cuts in CO₂ emissions. Having first introduced the technology at the Nishio Plant in fiscal 1991, DENSO has systematically installed eight systems at its facilities, with

an annual CO₂ reduction effect totaling approximately 51,300 tons of carbon. In fiscal 2002, a ninth system is scheduled for installation, at the Anjo Plant, and a micro-hydroelectric plant will be constructed to exploit wastewater outflows at the Nishio Plant.

ECO FIT

In August 2001, DENSO introduced at the Ikeda Plant the ECO FIT energy analysis system, which measures and displays electrical power consumption in real time facility by facility. This makes it easier to pinpoint areas for improvement and confirm the effect of measures already taken, which in turn gives greater impetus to energy-saving activities. DENSO plans to introduce this system in other factories.

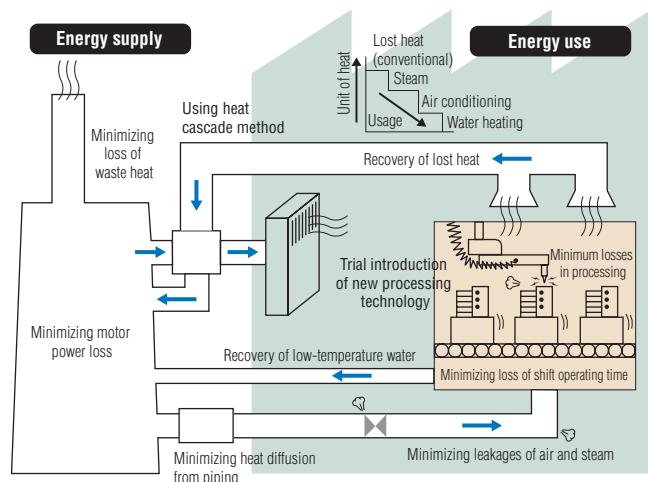


The Perfect Energy Factory Concept

DENSO has been working on the Perfect Energy Factory concept, which combines cogeneration, new energy sources, and ECO FIT as a methodology to minimize energy loss through wastage, since fiscal 2001. The system is being applied on a trial basis at seven plants, each handling a separate DENSO line of business.

Specifically, DENSO is building new energy-efficient production lines, eliminating energy loss by managing energy consumption line by line, and taking thorough measures to prevent the leakage of compressed air. DENSO is also installing heat cascade technology to minimize loss of waste heat. Successful initiatives will be adopted at other factories at an appropriate time, and will help reduce CO₂ emissions across the Group.

▼ How the Perfect Energy Factory Works



Managing and Reducing Substances with Environmental Impact

Fiscal 2001 goals

- (1) Reduction of emissions of PRTR substances by 17% compared with fiscal 1998 levels
- (2) Reduction of emissions of toluene and xylene by 28% compared with fiscal 1998 levels

Fiscal 2001 achievements

- (1) Reduced emissions of PRTR substances by 25% compared with fiscal 1998 levels
- (2) Reduction of emissions of toluene and xylene by 32% compared with fiscal 1998 levels
 - Completed development of substitute drip-proofing technology for paint and circuit boards

Managing and Reducing Environmentally Hazardous Substances

Hazardous substances contained in product parts and materials, and a secondary category of hazardous substances, those used during production processes, are managed on an integrated basis using DENSO's MaCAS system. PRTR-listed substances are the main targets of measures for reducing use.

* ⇒  See page 17

Reducing Use of PRTR-Listed Substances

DENSO aims to reduce emissions of PRTR-listed substances 30% by fiscal 2005 compared with fiscal 1998 levels. In the case of five substances of severe environmental impact*, DENSO is committed to zero emissions, and has targeted a 50% reduction in emission volumes of toluene and xylene (both VOCs).

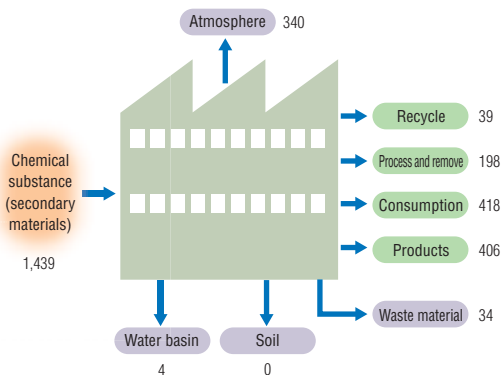
In fiscal 2001, DENSO switched from solvent-based paints containing toluene and xylene to powder-based paints with zero VOCs, enabling it to exceed its reduction targets in this category.

* Hexavalent chromes, lead, cyanide and their compounds, and formaldehyde, and tetrachloroethylene

 See page 42

▼ The Flow of PRTR Substances Accompanying Production Activities

(Unit: 1,000 tons)



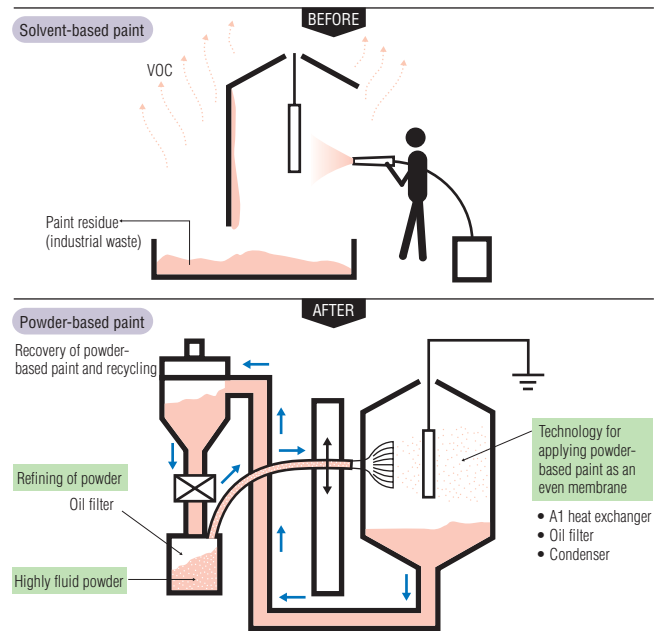
*DENSO Companies in Japan

Low-VOC Coating Technologies

Solvent-based paints principally consisting of VOCs, believed to cause photochemical smog, are widely used for A1 heat exchangers and similar systems.

To combat this problem, DENSO is shifting to powder-based paints with zero VOCs for metal parts and water paints (low in VOCs) for resins.

▼ Eliminating VOCs by Shifting to Powder-Based Paint



▼ Characteristics of Different Painting Methods

		Powder-based	Water-based	Solvent-based
Environment	Volumes of VOCs released	○ 0%	○ 10-30%	× 60-70%
Durability		◎	○	○
Appearance		○	○	◎
Evenness of coating		△	○	○
Color change		△	○	○

Cleaner Air and Water See pages 39 and 41

DENSO practices the rigorous management of air and water quality, based on agreements with local authorities that are stricter than legal provisions and in-house standards.

Voluntary Water Quality Standards

DENSO manages the quality of wastewater based on agreements with local authorities and in-house standards that are stricter than legal provisions. The basic reference point for setting voluntary targets is the water pollution control legislation that mandates that only one in five parts of wastewater may be contaminated. The toughest numerical targets in agreements with local authorities or their guidelines have been adopted by DENSO. For other substances, a ratio of one in two parts is adopted, and the strictest numerical targets in agreements with local authorities or their guidelines.

▼ Reducing Other Environmentally Hazardous Substances (FY2001)

Policy	Measures
Reduction of greenhouse gases	5% cut compared with fiscal 1999 levels by fiscal 2005 (in fiscal 2001, all PFCs* used in semiconductor-manufacturing processes were substituted with NF3**)
PCB processing	Concentration at Nagoya Plant
Dioxin reduction	Development of substitute technologies, such as compressed sludge method and drying, to avoid need for incineration
Elimination of hazardous substances from water systems	Completion of copper-lined systems to eliminate cyanide

* PFC: perfluorocarbon. One of the gases causing greenhouse effects designated for reduction under the Kyoto Protocol

** NF3: Nitrogen trifluoride

Soil and Groundwater Pollution Studies

DENSO has long used organic chlorine solvents such as trichloroethylene and 1,1,1-trichloroethane for the removal of oil from and cleaning of metal and IC parts. Pollution studies begun in fiscal 1995 established that levels of trichloroethylene (including dissolved 1,2-dichloroethylene) exceeded environmental standards at the headquarters factory and three other business locations and that levels of trichloroethane were acceptable.

▼ Fiscal 2001 Trichloroethylene Measurement Data

Plant	Concentration in plant site groundwater (mg/l)	Current status
Headquarters	Less than 0.002–5.114	Cleaning in progress
Ikeda Plant	Less than 0.002–2.000	Cleaning in progress
Anjo Plant	Less than 0.002–0.388	Cleaning in progress
Nishio Plant	Less than 0.002–0.375	Cleaning in progress

Progress in Purification and Information Disclosure

Measures initiated at the end of fiscal 1995, after studies were completed, to prevent the diffusion of soil pollution outside Company premises and decontaminate polluted soil were completed by March 2001. Polluted groundwater was treated using the pumping aeration method, and at the Ikeda Plant additional treatment was undertaken on a trial basis in March

2002 using the technologically innovative permeable groundwater purification wall method using iron powder.

DENSO reports regularly on the status of cleanup activities to the relevant public authorities. Information is also published in the DENSO Environmental Report and local communities are kept up to date through regional forums.

The Permeable Groundwater Purification Wall Method

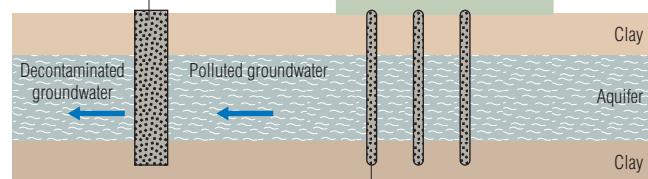
Polluted groundwater flowing under a factory site is decontaminated by passage through a system of underground walls and pillars, which cleanse by converting chlorine atoms in organic chlorine-based compounds into hydrogen atoms by the oxidizing and restorative action of iron powder. The wall is installed under an area of the factory site that is not built over, while the pillars are driven below empty areas of the factory such as passageways.



New technology for soil purification

▼ How the System Works

A 90cm wide x 20m deep x 150m long wall made of material incorporating iron powder is installed underground (with no change visible aboveground after the completion of the building)



Pillars made of iron powder are installed underground in passageways between facilities or other vacant spaces within the grounds of the plant. (After installation the surface is restored to its original condition.)

116 pillars made of iron powder (110cm wide x 20m deep)

Logistics

Fiscal 2001 goals

- (1) Reduce total CO₂ emissions from transportation activities to fiscal 1990 levels
- (2) Reduce volume of packing materials used to 16,000 tons a year

Fiscal 2001 achievements

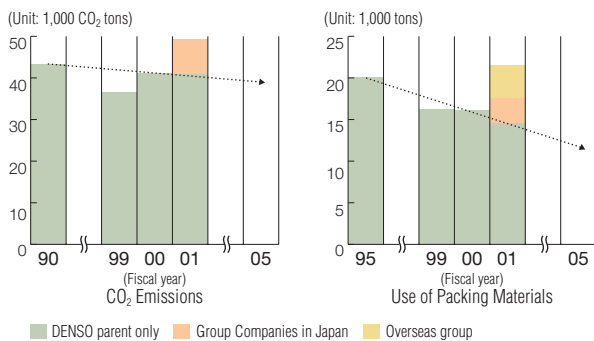
- (1) Reduced volume of CO₂ emissions from transportation to 41.1 thousand tons of CO₂, 5% less than fiscal 1990
- (2) Reduced volume of packing materials used to 14.6 thousand tons, 27% less than fiscal 1995

Logistics Systems

In line with the DENSO EcoVision, the Company is lowering environmental impact caused by logistics operations by reducing CO₂ emissions and use of packing materials. To reduce CO₂ emissions, logistics systems are being rationalized by improvement of the impact factor (ratio of impact to truck), modal shifts to rail and coastal shipping, and joint deliveries. In packing materials, DENSO is expanding use of proprietary resin pallets* with reduced environmental impact.

* ⇒ For more details, please see page 34 of DENSO's fiscal 2001 Environmental Report

▼ CO₂ Emissions and Use of Packing Materials



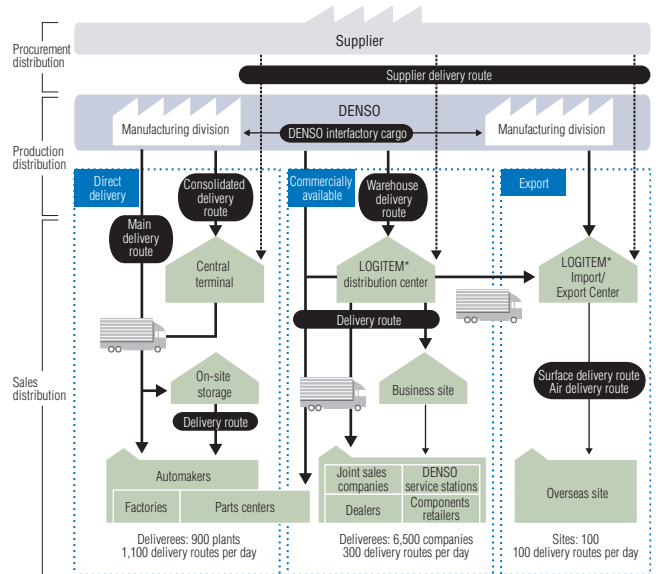
Reduction of CO₂ Emission and Packaging Materials

DENSO met its CO₂ and packaging materials reduction targets for fiscal 2001. To reduce CO₂ emissions, logistics terminals were streamlined by expanding them and joint delivery activities were organized. Expanded use of resin pallets helped reduce environmental impact from packaging.

Low-Pollution Vehicles See page 37

To achieve its goal of having low-pollution vehicles account for 15% of the Company's car fleet, DENSO is rapidly introducing low-pollution cars. In fiscal 2001, 17 hybrid cars were purchased, bringing the percentage of low-pollution vehicles up to 2.4%.

▼ DENSO Logistics Systems



* A 100% consolidated subsidiary that operates DENSO's logistics systems

Initiatives at Group Enterprises

DENSO (Thailand) Wins Environment Excellence Industrial Award (Environment Prime Minister Award)

Denso (Thailand) Co., Ltd. was awarded the "Environment Excellence Industrial Award" in the "Environment Protection" category from Thai Prime Minister Thaksin Shinawatra. This award is presented to companies that contribute to national industrial development.



Thai Prime Minister Thaksin Shinawatra honors Shinji Takeuchi of DENSO (Thailand)

Partnership/ Community Relations

A WORLD LEADER IN



PRODUCT MANUFACTURING—CLOSE-UP VIEW

[Air Conditioning Unit]

Car air conditioners are made up of compressors, condensers, evaporators, heaters, electronic control units, and a wide variety of sensors. An air conditioning unit comprises the evaporator (cooler), heater, and blower motor. DENSO has held the world's top market share in this product category since 1990, garnering 22% in fiscal 2000 (DENSO estimate). Within the industry, DENSO was the first to switch over to the use of a refrigerant that does not contribute to the destruction of the ozone layer. The Company is currently in the process of developing natural coolants for air conditioning systems.



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Highlights of Fiscal 2001

Community Relations

DENSO receives the J.D. Power and Associates Chairman's Award

In March 2002, DENSO received the J.D. Power and Associates Chairman's Award of this leading U.S. consumer research company in recognition of its efforts to raise product quality. DENSO is the first autoparts manufacturer to receive this award.

Community Activities

The Eco-ranger 21

Targeting children who will be responsible for shouldering the burdens of the next generation, DENSO launched a new hands-on environmental education program, entitled, "Environmental Education Program Eco Ranger 21," which is based on the theme of "Greenery, Water, and the Atmosphere." The first program, consisting of five lectures, ran from March to October 2001.

Partnership/Community Relations

Fiscal 2001 goal (1) Stage environmental forum in the Kariya area, Japan

Fiscal 2001 achievement (1) Joint event with six members of the Toyota Group

Enhancing Community Relations

DENSO is striving to make available environment-related information to all concerned parties. DENSO's main activities include environmental events for employees and communities located near DENSO facilities and participation in community activities.

Booth at Eco-Products 2001

To raise awareness among the general public of DENSO's environmental activities, the Company actively participates in externally organized exhibitions that have the environment as their theme. In October 2001, DENSO took part in the 35th Tokyo Motor Show, held in Chiba, Japan, and "Eco-Products 2001," held in Tokyo in December. Through these activities, the Company explained to the public how DENSO products contribute to environmental conservation. Like all other exhibiting companies, DENSO used environment-friendly materials in its booth, such as reusable and recycled materials, giving priority to design and construction that allow for the reduction of waste and pose a minimal burden on the environment.



Kenaf Cultivation

As part of employee education focused on environmental conservation, since May 2001, DENSO has been cultivating kenaf, which absorbs a large quantity of CO₂ and is useful in the conservation of forests because it can be used in paper making. Volunteers from within the Company began cultivation of the crop at the former waste disposal site in Okinohara, Kariya City. The kenaf was harvested in November and used to make business cards and environmental pamphlets for in-house use.



Regional Forums

In April and December of 2001, DENSO, in unison with five other Toyota Group companies, sponsored discussion forums in the Kariya area. Through these events, DENSO aims to strengthen the Company's symbiotic relationship with the local community. Outside the Kariya area, 10 forums are held each year with such events held regularly within neighborhood associations in the areas where DENSO facilities are located as the Council for Yahagigawa Riverbank Water Conservation Measures of the Aichi Fisheries Association's Nishi Mikawa Branch. At these events, which are accompanied by factory tours and activity reports, views are exchanged on the environmental problems at each locale.

Abashiri Testing Center—Environment-Friendly Development

We began construction of the Abashiri Testing Center in Abashiri, Hokkaido, in June 1998, and completed the facility in November 2001. Comprehensive and high-speed test drives are conducted at this center. During the development planning stage of this center, we took into account local academic and professional opinion and the views of nature conservation groups. Furthermore, we reduced the surface area of deforestation in accordance with our environmental assessment and afforested 200 hectares. The Oba City mayor and other related individuals were invited to the facility's opening ceremony and tours were offered to local residents and elementary school children.



DENSO Wins J.D. Power and Associates Chairman's Award

In March 2002, DENSO was awarded the J.D. Power and Associates Chairman's Award of the U.S. consumer research giant J.D. Power and Associates, whose market research and customer satisfaction surveys are held in high esteem worldwide. DENSO received this award in recognition of its efforts to improve the quality of the Company's autoparts. In the 34-year history of the Chairman's Award, only eight automakers have been recipients, and DENSO is the first autoparts maker to be honored. Other recipients include General Motors Corp., Ford Motor Co., and Toyota Motor Corp.



First Environmental Forum: "What is DENSO Doing for the Environment?"



In addition to the experts who on May 13, 2002, advised on DENSO's environmental activities, the Company would like to thank those people who submitted views appearing in DENSO's *Environmental Report 2002* and on our homepage. After witnessing DENSO's various environmental measures in action during a factory tour and other activities, DENSO convened a roundtable discussion and encouraged a frank exchange of opinions.

Sample Opinions and Views Received as Feedback

Environmental Community Relations

- Who is the target audience for your Environmental Report? What do you think about "Means for Achieving Reliability" and "Third-party Recognition" mentioned in this report?
- After studying last year's report, I was not able to determine the main points of it or identify the target audience.
- As DENSO is a private-sector company, the Environmental Report should be aimed at shareholders, similar to corporate (earnings) reports.
- There are some vague expressions, such as "zero emissions," which are used without being defined. Also, negative information has not been included.
- There is a lot of text and numerical data that is too technical for the general reader. What if you were to use larger photos and make an easy-to-read version? Such changes would make the report more user-friendly.
- The report clearly indicates the Company's thinking regarding environmental initiatives, and includes a general overview, specific targets, and a progress report. Related information is also included in the form of statistical data, with a high degree of public disclosure.
- Considering DENSO's scale and its large impact, would it not be better if the Company put more effort into communicating with members of the local communities and environmental education for employees, rather than just focusing on measures related to the Company's operations?
- At each factory, does DENSO prepare site reports for the members of local communities, which have a long-standing relationship with that factory? What does the Company think about the measures being undertaken by your Group affiliates?

Environmental Protection Activities

- Would it not be better if the Company made narrower classifications for energy usage, showing such categories as electricity, kerosene, and city gas? What about indicating the amount purchased in each case? What if DENSO were to comment on changes in the combination of energy sources used? I imagine that such an explanation would focus primarily on the CO₂ reductions that will result through the increase in city gas for use in cogeneration.

- The CO₂ reduction targets for fiscal 2010 are a 10% reduction from fiscal 1990 levels. Is a 15% reduction from the current level a large hurdle? Would it be acceptable to emphasize more strongly the Company's willingness to take on challenges? Would it not be worthwhile to evaluate the CO₂ reduction targets at the distribution stage?
- As for measures targeting a product's Life Cycle Assessment (LCA), what types of activities are being undertaken?

DENSO's Response

(Toshio Yamagata, General Manager of the Environmental Planning Department, DENSO Corporation)

In addition to regular business activities, DENSO believes it is crucial to cultivate a partnership with shareholders and other concerned parties. To this end, DENSO is making efforts to accurately inform the public about its environmental activities. Furthermore, striving for a two-way flow of communication concerning the environment, rather than a one-way transmission of information, DENSO has decided to sponsor this kind of roundtable discussion. Consequently, the Company was able to have many things called to its attention, and hear the many expectations people have of DENSO. In this sense, it has been a deeply meaningful event. DENSO will take this feedback into consideration in its future measures and approaches to communication.

Regarding DENSO's Environmental Report, we consider this as a tool to explain to people around the world the obligations DENSO must fulfill. In this fiscal year's version, DENSO has given priority to making the report easy to understand, while including numerical statistics and data aimed at experts. DENSO has attempted to modulate its message.

DENSO is in the process of seeking third-party recognition. Such an exchange of views that a roundtable discussion affords leads to improvement in the reliability of DENSO's environmental activities. Therefore, DENSO intends to expand such discussions.

DENSO is conducting roundtable discussions leading to ever-increasing interaction and the strengthening of the Company's symbiotic relationship with the local inhabitants as well as the implementation of environmental education programs. We are also expanding the scope of affiliated firms included in our environmental report, and making efforts toward implementing measures included in our third environmental action plan.

Regarding the energy-usage data, classified by individual energy sources, DENSO will provide such data whenever possible. As for the LCA, in terms of both operations and environmental considerations, DENSO is actively promoting measures in this area.

Thank you very much for facilitating such a meaningful exchange of views.

Participants:

Hirofumi Tange, The Faculty of Management of Aichigakuin University
Tomomi Toyosumi, Graduate Faculty of Aichigakuin University
Kunio Takahashi, Eco-Science Co., Ltd.
Naoto Hamashima, Environmental Control Center Co., Ltd.
Kazuo Mizuno, Tree Culture Research Institute
Yoshimi Watanabe, Komatsu Ltd.
Chikako Saito, Japan Association of Industries and Environment
Kazuhiro Sato, Teijin Fiber Ltd.
Norihiro Yasukawa, Tohoku Ryokka Kankyoohosen Co., Ltd.
Ichiro Kojima, Heiwa Paper Co., Ltd.
Masahiko Yano, Management System (Consulting Department), UFJ Institute Ltd.



Community Activities

Fiscal 2001 goal (1) Create environmental education programs for young people

Fiscal 2001 achievement (1) Carried out the Eco-ranger 21 environmental educational program for students in higher classes of elementary schools in Kariya City, Japan

Basic Philosophy and Priorities ¹

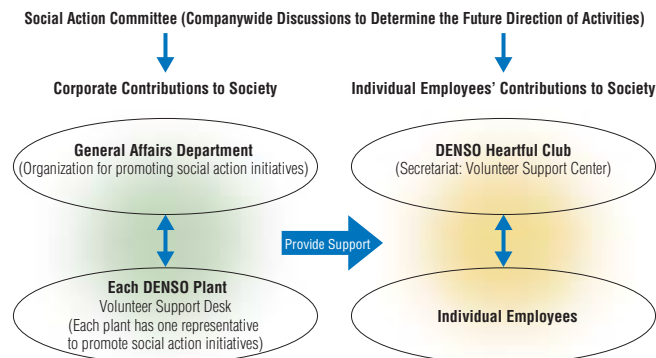
In addition to supplying high-quality products and services, DENSO endeavors to help provide solutions to social issues from a broad perspective and create a more affluent society. Drawing on its own distinctive features, DENSO seeks to establish empathy with the general public. To this end, the Company has selected three priority areas, with the hope that employees will voluntarily participate in community activities.

Priority Areas

DENSO is expanding the program content in three main areas: Welfare for Physically Challenged People, Nurturing Youth, and Protecting the Environment.

Policy Implementation

DENSO has established the Social Action Committee (the Secretariat is DENSO's General Affairs Department), which conducts discussions and studies to promote Companywide social action programs and addresses the details of their implementation. We are preparing a system within the Company to aid employees in their voluntary participation in social action programs.



Welfare for Physically Challenged People

DENSO has undertaken a variety of activities in pursuit of the goal of a "barrier-free society." One is the Wheelchairs and Friendship Center of Asia. In fiscal 2001, the Company provided support for wheelchair production and helped to make the wheelchairs more readily available in certain Asian

countries, as well as promoting sports and educational exchanges. DENSO's objective is to create an environment in which physically challenged people may achieve social and economic independence.



Nurturing Youth

DENSO stages various educational events for young people. Among these is the "DENSO Invention Festival," in which participants experience the pleasure of building something with their own hands. A two-day program is offered at the DENSO Junior College, which is part of the Takatana Plant. Approximately 1,000 local elementary and junior high school students enjoyed learning about the internal workings of various items such as kaleidoscopes and mobile tele-

phones. DENSO sends approximately 100 volunteers to oversee the program and provide guidance.



Protecting the Environment

DENSO is undertaking a variety of activities with the objective of contributing to the realization of an affluent society that is also safe, relaxing, and comfortable. Among the activities is the environmental education program Eco-ranger 21. In March 2001, DENSO launched this hands-on program, which aims to further children's understanding of the importance of environmental conservation in an enjoyable way in natural surroundings. With the backing of Kariya city, the Kariya Municipal Board of Education and the cooperation of the Kariya Youth Association, lecturers were invited to speak on a variety of topics, with the first series consisting of five lectures. Twenty elementary school children (fourth, fifth, and sixth graders) residing in Kariya took part.



¹ <http://www.DENSO.co.jp/SOCIAL/>

Personnel Issues

ACTIVE 21

DENSO drew up ACTIVE 21, a set of Companywide human resource policies embodying the DENSO VISION 2005 long-term management blueprint. This calls for DENSO to open the door to possibilities for society, customers, and employees. In accordance with these policies, numerous measures were applied between fiscal 1998 and fiscal 2000 to transform the thinking of DENSO employees.

The Three Desired Attributes of the DENSO Employee

ACTIVE 21 is intended to ensure that each employee's potential is brought into play. Its basic concepts are instilling in employees a willingness to proactively take on challenges without fear of error, a professionalism that commands a high level of expertise and skill necessary in various fields, and a broad global outlook in attitude and action.

▼ The Three Desired Attributes of the DENSO Employee

A Willingness to Take On Challenges

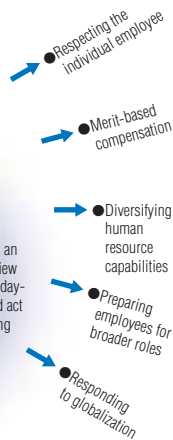
Unafraid of making mistakes and willing to take on new challenges, and original in creation of value—these are the values DENSO is seeking to instill in every employee, while respecting individual initiative and rewarding the employee on merit.

Professionalism

DENSO is striving to attract and groom individuals who have acquired a high level of technical expertise in a variety of fields to further their careers and to provide opportunities to make use of these skills inside and outside of the Company.

A Global Outlook

On a daily basis, DENSO has created an environment where employees can view issues from a broad perspective on a day-to-day basis, think internationally, and act accordingly, with the aim of nurturing personnel who can take part in successful operations around the globe.



The Five Pillars

DENSO has implemented a variety of systemic changes to encourage employees to embody the three desired attributes. To this end, the Company has created “The Five Pillars.” These five pillars are used to generate new possibilities for employees.

① Respecting the individual employee

To spur employees' consideration of career development, the Company has introduced a variety of support activities, such as a career planning seminar for employees in their 30s, a career counseling system, “ACTIVE Seminar” training programs, the “FA” rotation system, which allows employees to switch jobs without approval from immediate superiors, and a comprehensive job rotation system for administrative positions. The majority of employees have already used these systems.

② Merit-based compensation

DENSO has introduced a system of employee evaluations and a merit-based pay scale. Employees are encouraged to set and aim for high targets. DENSO is creating a system that takes into account employee initiative and seeks to raise employee satisfaction regarding their evaluations.

③ Diversifying human resource capabilities

To cultivate professionalism, DENSO has revised its policy of encouraging all employees to strive to become managers to one that encourages them to make better use of their individual skills and expertise.

④ Preparing employees for broader roles

DENSO is implementing career planning seminars for employees in their 40s, helping them to recognize their strengths. Within DENSO's working-level departments, the Company has created support activities to help employees maintain a high level of physical health.

⑤ Responding to globalization

DENSO has created a menu for foreign-language training, which is the fundamental skill required for taking part in global activities. DENSO is offering international management training, cross-cultural training seminars, and other training programs. The Company also undertakes the training of its staff at overseas subsidiaries and is supporting the revision of the human resources system at each of its operational bases.

Safety in the Workplace

Fiscal 2001 goal (1) Reduce the work stoppage rate to less than 0.05

Fiscal 2001 achievement (1) Reduced the work stoppage rate to 0.03

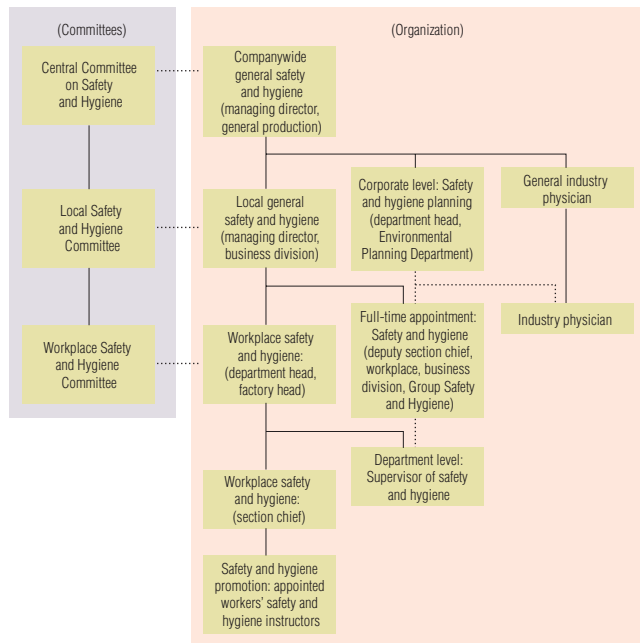
The Company adheres to the DENSO Safety and Hygiene Environment Standards (DAS), which cover work-related accidents, disaster and accident-prevention measures for each facility, and operational procedure.

DAS has been revised to reflect all legal revisions or changes in production processes, and lessons learnt from disasters and accidents are incorporated. Consequently, the Company has been able to maintain a relatively low accident rate compared with other firms in the industry. DENSO will continue to strive to realize its target of zero accidents.

Basic Policy

The Company's priorities are to ensure the safety and health of its employees and to create a dynamic company. With the cooperation of the entire staff, DENSO is implementing various disaster- and accident-prevention measures.

Safety and Hygiene Promotion System



Toward a Broader and Better Mental Healthcare System

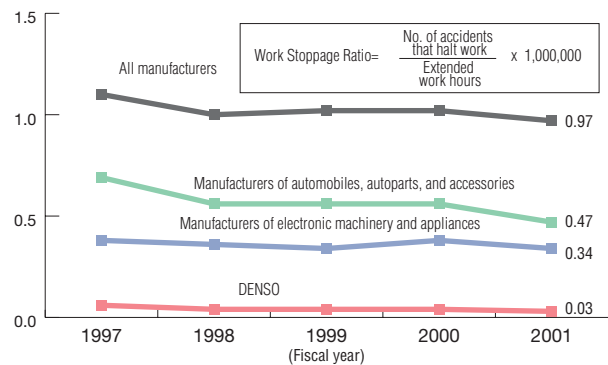
Since fiscal 1999, DENSO has been undertaking measures to expand its mental healthcare program. In fiscal 2000, a mental healthcare counseling service (at the Kariya Plant) and a health-

Basic Safety and Hygiene Philosophy

The health and physical well-being of employees is a paramount consideration.

1. In the creation of a safe working environment, DENSO will implement the best policies to realize high productivity while simultaneously respecting the human needs of workers.
2. With respect to these various activities, not only managers connected with safety, hygiene, and pollution prevention but all managers and each individual employee will diligently work toward the realization of DENSO's target of zero accidents.

▼ Incidence Rate of Work-Related Accidents (Work Stoppage Ratio)



care homepage were set up. In fiscal 2001, the counseling service was set up in three additional locations. We are simultaneously offering a mental health management training program.

Creating a Pleasant Working Environment

With the aim of maintaining the health of our employees, the Company trains employees about the proper handling of hazardous chemicals and the removal or substitution of certain energy sources, in accordance with legal regulations requiring that the concentrations of hazardous substances be strictly controlled by dilution to one-fifth of their original concentration. The Company uses the Material Safety Data Sheet method to notify workers of the harmful nature of the substances being handled. DENSO is also making efforts to improve the physical work environment in its locations. Referring to engineering evaluations, DENSO has devised measures to reduce heat emissions, noise emissions, and work loads. Furthermore, the Company has made improvements to rest rooms and locker rooms with the aim of providing a healthier work environment for employees.



Reducing workloads: Improving korokon, reducing transport loads



Combating hot weather: Air conditioning on the production line floor

DENSO Databook

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A WORLD LEADER IN



PRODUCT MANUFACTURING—CLOSE-UP VIEW

[Power Window Motors]

Many small motors are used in automobiles for such functions as wipers, washers, and power windows. In luxury automobiles, there can be up to sixty small motors per vehicle.

DENSO is the world's top manufacturer of these motors, of which the development and production is entrusted to ASMO Co. Ltd.

The Company has held the top global market share in motors for power windows since fiscal 1996 and in fiscal 2000 its share of the global market for these products reached 28% (DENSO estimate).



DENSO EcoVision 2005

■ Commitment

DENSO hereby declares that it will focus the efforts of the DENSO Group on two objectives that will enable it to continue as an environmental leader as it strives to make an increasingly active recycling economy a reality. These objectives shall be the pursuit of R&D to ensure harmony with the environment and the pursuit of sustainable environmental conservation. Furthermore, this decision has been made in accordance with DENSO's perception that environment-friendly corporate management will create a new corporate standard in the 21st century. Both DENSO EcoVision 2005 and the Third Environmental Action Plan are to be developed as five-year plans, effective through fiscal 2005.

■ Basic Policies

- DENSO undertakes to focus the efforts of the Group on strengthening environmental management from a global perspective.
- DENSO undertakes to pursue environment-friendly development, design, and production activities from a comprehensive viewpoint, encompassing every stage in a product's life cycle, including production, use in the marketplace, and eventual disposal.
- DENSO undertakes to vigorously create alliances outside the framework of its particular fields of business, to disseminate information, and to work toward a higher degree of communication with shareholders and others affected by our activities.

■ Action Plan

1 Strengthening environmental activities that are compatible with consolidated management

a) Enhancing Groupwide activities

To ensure successful reinforcement of the DENSO Group's environmental measures, the Basic Policies and Action Plan will apply equally to and be pursued jointly by all of the companies in the DENSO Group.

b) Expansion of the environmental management system

To further strengthen our environmental management system and increase external accountability, DENSO has aggressively sought ISO 14001 accreditation, the international standard for environmental management systems. DENSO will continue to ensure that each company in the Group achieves ISO 14001 certification as part of its effort to further strengthen the foundations of its consolidated management structure.

c) Optimization of the organization for promotion

Environmental issues shall be assigned with maximum priority in terms of management issues, and to provide full support for this approach, the Environmental Committee organization shall be optimized and this committee shall be effectively operated, thus providing a mechanism for consolidated and unified discussion and decision making.

2 Environment-friendly development and design

a) Better environment-friendly design

We will create and adopt a design review system for the development and design stage for prior evaluation of the environmental impact of a product, focusing on factors such as fuel economy, exhaust emissions, recycling potential, and use of environmentally hazardous substances.

b) Environment-friendly procurement

As a means of reducing the overall environmental impact of a given product, including all of the materials and parts that are purchased for its manufacture, we undertake to create an environment-friendly corporate structure through partnerships with suppliers and, in this, to promote a green (or environment-friendly) procurement system that enables the purchase of materials and parts with lower environmental impact.

3 Reducing environmental impact and the Clean Factory concept

a) DENSO undertakes to further reduce environmental impact during production through conservation of raw materials and energy.

b) To make the Clean Factory concept a reality, DENSO undertakes to establish a system for setting voluntary management targets and achieving continual reduction in environmental load.

4 Outreach and dialogue

a) DENSO undertakes to create alliances with academic and administrative bodies outside usual business networks, and will endeavor to make valuable contributions to society by adhering to environment-friendly production and business practices.

b) DENSO undertakes to work vigorously to keep all shareholders and other concerned parties fully briefed regarding its environmental activities, and will increase dialogue with local communities.

Environmental Accounting and Results

■ Fiscal 2001 Environmental Protection Costs

Category of Environmental Protection Costs			Investment (¥100 million)		Expenses (¥100 million)	
			DENSO	Total for 15 Domestic Companies	DENSO	Total for 15 Domestic Companies
At business locations 1. Reducing environmental load from production activities	(1) Pollution prevention	Costs of purchasing/maintaining facilities and equipment for preventing air, water, soil, noise, odor, subsidence, and other types of pollution or environmental damage	4.20 (3.2)	1.64 (1.2)	1.09 (0.8)	0.60 (0.5)
	(2) Global environment	Costs of energy-efficient facilities to prevent global warming and destruction of the ozone layer, and other global environmental protection costs	27.10 (20.4)	3.73 (2.8)	0.00	0.63 (0.5)
	(3) Resource recycling	Costs of streamlining resource usage and recycling, reduction and processing of waste, etc.	6.12 (4.6)	0.06 (0.05)	8.22 (6.2)	0.73 (0.5)
2. Upstream and downstream production activities	(4) Cost differential between production and purchasing of products, fuels, and materials with low environmental impact and conventional products, fuels and materials		14.86 (11.2)	0.01 (0.01)	0.00	0.27 (0.2)
	(5) Cost of recycling, recollection, re-commercialization, and appropriate processing of produced and marketed products					
	(6) Cost of recycling, recollection, re-commercialization, and appropriate processing of containers and packaging					
	(7) Additional cost of providing products and services that contribute to environmental protection					
	(8) Additional cost for reducing environmental impact of containers and packaging					
3. Management activities	(9) Other costs related to (4)-(8) above					
	(10) Expenses for environment-related employee education		0.00	0.02 (0.02)	4.23 (3.2)	2.44 (1.8)
	(11) Expenses for establishment, operation, and certification of EMS (12) Environmental monitoring costs (13) Human resources expenses for environmental protection organization and human resources expenses related to (10)-(12) above					
4. R&D	(14) R&D expenses for products that contribute to environmental protection		14.14 (10.6)	0.09 (0.07)	125.20 (94.1)	0.88 (0.7)
	(15) R&D and planning costs of reducing environmental impact at manufacturing stage					
	(16) Other R&D and planning costs to reduce environmental impact at distribution and marketing stages					
5. Community activities to win public understanding and support	(17) Costs for environmental improvements such as conservation, promotion of greenery, beautification, and preservation of scenery		0.00	0.03 (0.02)	0.44 (0.13)	0.16 (0.1)
	(18) Costs for support of environmental activities of local residents and publication of environmental information and hosting of seminars, etc. for local residents					
	(19) Costs for contributions and support for environmental groups					
	(20) Costs for dissemination of environmental information and environmental PR					
6. Compensation costs	(21) Expenses for soil cleanup, environmental restoration, etc.		0.00	0.00	0.98 (0.7)	0.00
	(22) Reserve and insurance expenses for environmental damage					
	(23) Settlement, compensation, damages, and court costs related to environmental protection					
Total			66.42 (50.0)	5.58 (4.2)	140.16 (105.3)	5.70 (4.3)

*Figures in () are US\$ million

Fiscal 2001 Environmental Effects

			Volume (Unit/year)			Value of effect (¥100 million)			
			Unit	DENSO	Total for 15 Domestic Companies	DENSO	Total for 15 Domestic Companies		
Actual effect	Revenue from business activities	Proceeds of sale of recycled materials	ton	61,013	32,500	12.68 (9.5)	1.01 (0.8)		
		Revenue from products	—	Figures not available					
	Benefits of cost reduction	Energy conservation	CO ₂ reduction	ton-CO ₂	28,200	444	8.90 (6.7)	0.30 (0.2)	
		Waste reduction		ton	4,200	2,369	4.23 (3.2)	0.11 (0.08)	
		Effect of reduced use of environmentally hazardous materials	Toluene, xylene	ton	94	25	—	0.07 (0.05)	
		Reduced costs for environmental protection activities	Conservation of resources		ton	9,980	11	3.65 (2.7)	0.32 (0.2)
			Conservation of water		10,000 tons	79	—		
Reduction of paper use			10,000 pages	3,000	653				
Presumed and incidental effects	Presumed effects of added-value contribution	De facto CO ₂ reduction	ton-CO ₂	(28,200)	(444)	0.23 (0.2)	0.05 (0.04)		
	Presumed effects of increased environmental awareness	TQM, training, etc.	hours	70,000	720	0.49 (0.4)	0.00		
	Presumed effects of PR	Homepage access		hits	7,500	10,698	0.88 (0.7)	0.36 (0.3)	
		Awards, etc.		awards	13	—			
		Visitors, etc.		number	555	1,479			
	Avoidance of restitution costs, lawsuits, etc.		—	Figures not available					
Total						31.05 (23.3)	2.22 (1.7)		

*Figures in () are US\$ million

Environmental Awards and Commendations from Fiscal 1996 to 2001

Japan

Date	Recipient	Award	Conferred by
February 2002	Kota Plant	Award for Factory Energy Management Excellence (Heat Division) from the Director of the Chubu Regional Bureau of the Ministry of Economy, Trade and Industry (METI)	Energy Conservation Center
January 2002	DENSO	Award for Excellent Energy Conservation Exhibit in National Exhibition from the Director of the Chubu Regional Bureau of METI	Energy Conservation Center
January 2002	DENSO	Award for Excellent Energy Conservation Exhibit in National Exhibition from the Director of the Energy Conservation Center	Energy Conservation Center
January 2002	DENSO	Energy Conservation Center Award of Excellence for Excellent Energy Conservation Exhibit in National Exhibition	Energy Conservation Center
January 2002	DENSO	Energy Conservation Award (for household water heater using CO ₂ coolant)	Energy Conservation Center
January 2002	DENSO	2001 Important New Product Award (household water heater using CO ₂ coolant)	<i>Nikkan Kogyo Shimbun</i>
October 2001	DENSO	11th Global Environmental Technology Award (household water heater using CO ₂ coolant)	<i>Nihon Keizai Shimbun</i>
February 2001	Toyohashi Plant	Award for Factory Energy Management Excellence (Electrical Division) from the The Ministry of International Trade and Industry (MITI)	Energy Conservation Center
February 2001	Ikeda Plant	Award for Factory Energy Management Excellence (Electrical Division) from the Director of the Agency of MITI	Energy Conservation Center
February 2001	ASMO Toyohashi Plant	Award for Factory Energy Management Excellence (Electrical Division) from the Director of the Agency of MITI	Energy Conservation Center
February 2001	DENSO	Award for Excellent Energy Conservation Exhibit in National Exhibition, from METI	METI
September 2000	DENSO	Award for Protection of the Ozone Layer from MITI	<i>Nikkan Kogyo Shimbun</i>
February 2000	Daian Plant	Award for Factory Energy Management Excellence (Heat Division) from the Director of the Resource and Energy Agency	MITI
April 1999	DENSO	Technology Prize (for common rail diesel fuel-injection system)	The Japan Society of Mechanical Engineers
February 1999	Nishio Plant	Award for Factory Energy Management Excellence (Electrical Division) from the Director of the Agency of MITI	MITI
February 1998	Daian Plant	Award for Factory Energy Management Excellence (Electrical Division) from the Director of the Agency of MITI	MITI
February 1997	DENSO	Prize for Energy Conservation Excellence (for a heater/cooler system using an economical kerosene heat pump)	The Japan Society of Mechanical Engineers
February 1997	Anjo Plant	Award for Factory Energy Management Excellence (Heating Division) MITI	MITI
February 1997	Takatana Plant	Award for Factory Energy Management Excellence (Electrical Division) from the Director of the Chubu Regional Bureau of MITI	MITI
April 1996	Nishio Plant	Technology Prize (for a machine that recovers refrigerants for reuse) from the Japan Society of Mechanical Engineers	
February 1996	Takatana Plant	Award for Factory Energy Management Excellence (Heating Division) from the Director of the Agency of MITI	MITI
February 1996	Nishio Plant	Award for Factory Energy Management Excellence (Electrical Division) from the Director of Chubu Regional Bureau of MITI	MITI

Overseas

Date	Recipient	Award	Conferred by
May 2002	DENSO (Thailand) Co., Ltd.	Environment Excellence Industrial Award (Environment Prime Minister Award)	Government of Thailand
March 2002	DENSO (Japan)	Climate Protection Award	U.S. Environmental Protection Agency
November 1999	DENSO Manufacturing UK. (United Kingdom)	Energy Efficiency Accreditation Award	British government
June 1999	DENSO Manufacturing Australia Pty. Ltd. (Australia)	EPA* Cleaner Production Award	Australian EPA
1994-1999 (6 consecutive years)	DENSO Manufacturing Tennessee, Inc. (United States)	Kentucky-Tennessee Water Environment Association Pretreatment Excellence Award	Water Environment Federation
December 1998	DENSO Manufacturing Michigan, Inc. (United States)	C3 (Clean Corporate Citizen) Award	State of Michigan
July 1998	Australian Automotive Air Pty. Ltd. (Australia)	EPA Cleaner Production Award	Australian EPA
February 1997	American Industrial Manufacturing Services, Inc. (United States)	California Water Environment Association Award	Association for the Protection of Water Quality in the State of California

*EPA: Environmental Protection Authority

DENSO Group Environmental Performance Data

Classification	Environmental Performance Data				Unit	DENSO	Domestic Group Companies	Overseas Group Companies	Total		
Input	Total volume	Raw material	Metals	Ferrous	Tons	143,137.0	73,457.0	27,174.9	243,768.9		
				Nonferrous	Tons	169,586.0	23,580.0	23,329.5	216,495.5		
				Total	Tons	312,723.0	97,037.0	50,504.4	460,264.4		
			Energy consumption	Volume, fuels consumed in direct transportation (passenger use, commutation, gasoline for company vehicles)	Non-metallic		Tons	28,489.0	14,091.9	17,572.5	60,153.4
					Total		Tons	341,212.0	111,128.9	68,076.9	520,417.8
					Office materials	The volume of copier paper (volume purchased)		Tons	433.2	167.8	—
	Electricity (Purchased)				MWh	956,019.0	166,931.3	145,234.9	1,268,185.2		
	Fuel	A Heavy Oil			Kl	13,874.0	12,327	—	26,201.0		
		C Heavy Oil			Kl	0	0	—	0.0		
		Kerosene			Kl	7,607.0	3,880.1	—	11,487.1		
		Butane			Tons	922.0	2,503.2	—	3,425.2		
		City gas			10,000 m ³	8,435.2	45.9	20.6	8,501.7		
		Coke			Tons	0	0	—	0.0		
		Coal			Tons	0	0	—	0.0		
		Electricity from cogeneration			MWh	206,083.0	31,895	—	237,978.0		
	Gasoline				Kl	1,168.0	—	—	1,168.0		
	Light Oil				Kl	90.0	—	—	90.0		
	Water supply dosage				10,000 m ³	773.0	121.1	106.4	1,000.5		
	The input volume of hazardous material				PRTR	Zinc water-soluble compounds	Tons	1.20	1.90	3.10	
						2-amino ethanol	Tons	49.70	0.00	49.70	
				Antimony and its compounds		Tons	2.30	0.00	2.30		
				Polymer of 4,4-isopropylidenediphenol and 1 chloro-2,3-epoxypropane (liquid type)		Tons	70.00	16.30	86.30		
				Ethyl benzene		Tons	17.50	1.10	18.60		
Ethylene glycol monoethyl ether				Tons		14.10	10.50	24.60			
Ethylene glycol monoethyl ether acetate				Tons		12.10	0.00	12.10			
2,3 epoxypropanol-phenyl ether				Tons		36.50	0.00	36.50			
Xylenes				Tons		328.20	37.90	366.10			
Chrome and trivalent chrome compounds				Tons		7.10	0.00	7.10			
Hexavalent chrome compounds				Tons		9.40	3.10	12.50			
Phthalic acid (2-ethoxyethylene)				Tons		0.00	20.03	20.03			
Inorganic cyan compounds				Tons		0.00	2.56	2.56			
Hexamethylenetetramine				Tons		0.00	88.08	88.08			
1,3,5 trimethylbenzene				Tons		57.40	0.00	57.40			
Toluene				Tons		212.30	42.80	255.10			
Lead and its compounds				Tons		118.30	83.80	202.10			
Nickel				Tons		1.40	0.00	1.40			
Nickel compounds				Tons		7.00	0.00	7.00			
Pyrocatechol				Tons		4.00	0.00	4.00			
Phenol				Tons		1.70	22.30	24.00			
Bis (2-ethylhexyl) phthalate				Tons		2.00	0.00	2.00			
Fluorine compounds and other water-soluble chlorides				Tons		127.00	0.00	127.00			
Benzene				Tons		5.00	0.00	5.00			
Boron and its compounds	Tons	1.70	0.00	1.70							
Poly (oxyethylene)-nonyl acetate	Tons	1.30	0.00	1.30							
Molybdenum and other compounds	Tons	3.70	0.00	3.70							
Dichloropentafluoropropane	Tons	0.00	4.20	4.20							
Others	Tons	0.00	6.00	6.00							
Total				Tons	1,099.00	340.57	Not applicable	1,439.57			
Green Procurement/Purchasing		Green purchasing of office equipment		10,000 yen	2,600.0	—	—	2,600.0			
Output	Emissions to atmosphere and water	Volume of greenhouse gas emissions	CO ₂	Tons-CO ₂	566,764.00	33,612.77	31,679.10	632,055.87			
			HFC	Tons-CO ₂	7,021.00	30.30	—	7,051.30			
			PFC	Tons-CO ₂	67,724.00	0.00	—	67,724.00			
			SF ₆	Tons-CO ₂	5,609.00	0.00	—	5,609.00			
			N ₂ O	Tons-CO ₂	87.00	0.00	—	87.00			
			CH ₄	Tons-CO ₂	0.00	0.00	—	0.00			
			Total	Tons-CO ₂	647,205.00	33,643.07	31,679.10	712,527.17			
			Emissions of substances that destroy the ozone layer (volume)	CFC	Tons	0.0	0.0	—	0.0		
		Halon		Tons	0.0	0.0	—	0.0			
		HCFC		Tons	0.0	6.1	—	6.1			
		Trichloroethane		Tons	0.0	0.0	—	0.0			
Total				Tons	0.0	6.1	—	6.1			

Classification	Environmental Performance Data				Unit	DENSO	Domestic Group Companies	Overseas Group Companies	Total
Output	Emissions into atmosphere and water	Emissions of controlled substances into water	Volume of emissions	BOD	Tons	12.70	7.89	—	20.59
				COD	Tons	36.00	16.23	—	52.23
				SS	Tons	10.00	6.18	—	16.18
				Oil	Tons	7.70	2.35	—	10.05
				Phenol	Tons	0.00	—	—	0.00
				Copper	Tons	0.10	—	—	0.10
				Zinc	Tons	0.80	—	—	0.80
				Soluble iron	Tons	0.10	—	—	0.10
				Soluble manganese	Tons	0.10	—	—	0.10
				Chrome	Tons	0.00	—	—	0.00
				Fluorine	Tons	5.40	—	—	5.40
				Nitrogen	Tons	49.70	46.85	—	96.55
				Phosphorus	Tons	1.50	5.70	—	7.20
				Cyanide	Tons	0.00	—	—	0.00
	Hexavalent chrome	Tons	0.00	—	—	0.00			
	Volume of wastewater	10,000 m ³	630.0	113.0	—	743.0			
	Emissions of controlled substances into atmosphere	Volume of emissions	SO _x	Tons	50.7	19.6	—	70.3	
			NO _x	Tons	196.4	36.1	—	232.5	
			Particulate matter	Tons	18.7	2.5	—	21.2	
			Benzene	Tons	0.5	—	—	0.5	
Chlorinated solvents			Tons	0	—	—	0		
Waste emissions	Total volume of waste emissions	Volume of recycled resources	Contracted recycling (sale)	Tons	61,300.0	38,265.5	—	99,565.5	
			Inverse contracted recycling	Tons	16,700.0	7,313.1	—	24,013.1	
			In-house recycling	Tons	2,600.0	157.6	—	2,757.6	
			Total	Tons	80,600.0	45,736.2	—	126,336.2	
			Waste sent to landfills (including incinerated waste)	Tons	2,100.0	1,597.9	6,211.5	9,909.4	
Total	Tons	82,700.0	47,334.1	6,211.5	136,245.6				
The output volume of hazardous materials	PRTR	Zinc water-soluble compounds	Tons	0.00	0.30	—	0.30		
			2-amino ethanol	Tons	0.50	0.00	—	0.50	
			Antimony and its compounds	Tons	0.00	0.00	—	0.00	
			Polymer of 4,4-isopropylidenediphenol and 1 chloro-2,3-epoxypropane (liquid type)	Tons	0.00	0.60	—	0.60	
			Ethyl benzene	Tons	0.10	1.10	—	1.20	
			Ethylene glycol monoethyl ether	Tons	14.10	10.50	—	24.60	
			Ethylene glycol monoethyl ether acetate	Tons	12.10	0.00	—	12.10	
			2,3 epoxypropanol=phenyl ether	Tons	0.00	0.00	—	0.00	
			Xylenes	Tons	124.20	37.80	—	162.00	
			Chrome and trivalent chrome compounds	Tons	7.10	0.00	—	7.10	
			Hexavalent chrome compounds	Tons	2.30	0.00	—	2.30	
			Phthalic acid (2-ethoxyethylene)	Tons	0.00	20.00	—	20.00	
			Inorganic cyan compounds	Tons	0.00	0.05	—	0.05	
			Hexamethylenetetramine	Tons	0.00	7.90	—	7.90	
			1,3,5 trimethylbenzene	Tons	0.00	0.00	Not applicable	0.00	
			Toluene	Tons	66.00	42.80	—	108.80	
			Lead and its compounds	Tons	1.50	0.00	—	1.50	
			Nickel	Tons	1.10	0.00	—	1.10	
			Nickel compounds	Tons	6.00	0.00	—	6.00	
			Pyrocatechol	Tons	0.00	0.00	—	0.00	
			Phenol	Tons	1.70	2.00	—	3.70	
			Bis (2-ethylhexyl) phthalate	Tons	2.00	0.00	—	2.00	
			Fluorine compounds and other water-soluble chlorides	Tons	1.40	0.00	—	1.40	
			Benzene	Tons	0.00	0.00	—	0.00	
			Fluorine compounds and other water-soluble chlorides	Tons	1.70	0.00	—	1.70	
			Poly (oxyethylene)=nonyl acetate	Tons	0.10	0.00	—	0.10	
			Molybdenum and other compounds	Tons	3.70	0.00	—	3.70	
			Dichloropentafluoropropane	Tons	0.00	4.20	—	4.20	
Others	Tons	0.00	0.00	—	0.00				
Total	Tons	245.60	127.25	—	372.85				
Transport	Total volume transported	Volume of CO ₂ emissions	Tons-CO ₂	41,066.6	8,513.3	—	49,579.9		
	Packaging and containers	Volume of packaging and containers used	Tons	14,528.0	3,064.7	3,886.2	21,478.9		
Number and ratio of low emissions, high-fuel efficiency vehicles	Vehicles for passengers and sales	Passenger cars	Cars	20	—	—	20		
		Trucks and busses		2	—	—	2		
		Others		0	—	—	0		
		Load carriers, transport vehicles		0	—	—	0		
		Total		662	—	—	662		
Stock of hazardous substances	Volume of toxic substances in stock (PCBs)	Condensers (for neon lights)	Cars	36,426	13,033	—	49,459		
		Transformers		0	407	—	407		
		Others		0	103	—	103		
		Total		36,426	13,543	—	49,969		

Environmental Data by Business Location

Water and air survey data are shown by substance for each business location (Due to differences in materials used in production processes, items are different for each business location.)

Water Pollution Data

Plant	Substance ¹	Legal Limit	DENSO Standard	Actual Measurement ²			
				Maximum	Minimum	Average	
DENSO Headquarters	pH	5.8-8.6	5.8-8.6	7.6	6.5	7.2	
	BOD (mg/l)	25	12.5	10.2	0.6	3.6	
	COD (mg/l)	—	15	13.0	0.0	6.4	
	SS (mg/l)	30	15	5.0	ND	1.4	
	Oil (mg/l)	5	2.5	ND	ND	ND	
	Phenol (mg/l)	5	1	ND	ND	ND	
	Copper (mg/l)	1	0.5	0.05	ND	0.02	
	Zinc (mg/l)	5	2.5	0.11	0.03	0.06	
	Soluble iron (mg/l)	5	2.5	ND	ND	ND	
	Soluble manganese (mg/l)	5	2.5	ND	ND	ND	
	Chrome (mg/l)	2	1	ND	ND	ND	
	Fluorine (mg/l)	8	6.4	2.1	0.3	0.9	
	Colon bacillus (#/cm ²)	3,000	1,500	302	0	15	
	Total nitrogen (mg/l)	60	15	11.0	2.0	7.7	
	Total phosphorus (mg/l)	8	2	1.10	ND	0.48	
	Cyanide (mg/l)	1	0.2	ND	ND	ND	
	Hexavalent chrome (mg/l)	0.5	0.1	ND	ND	ND	
	Keda Plant	pH	5.8-8.6	5.8-8.6	7.8	6.8	7.2
BOD (mg/l)		25	12.5	3.5	0.9	2.2	
COD (mg/l)		—	15	5.5	1.5	2.6	
SS (mg/l)		30	15	3.1	ND	1.1	
Oil (mg/l)		5	2.5	ND	ND	ND	
Phenol (mg/l)		5	1	ND	ND	ND	
Copper (mg/l)		1	0.5	0.10	ND	0.02	
Zinc (mg/l)		5	2.5	0.30	0.02	0.03	
Soluble iron (mg/l)		5	2.5	0.2	ND	ND	
Soluble manganese (mg/l)		5	2.5	ND	ND	ND	
Chrome (mg/l)		2	1	ND	ND	ND	
Fluorine (mg/l)		8	6.4	0.9	0.2	0.5	
Colon bacillus (#/cm ²)		3,000	1,500	15	0	2	
Total nitrogen (mg/l)		60	15	7.5	0.1	2.5	
Total phosphorus (mg/l)		8	2	0.90	ND	0.08	
Anjo Plant (No.1)		pH	5.8-8.6	6.0-8.5	7.3	6.4	6.8
		BOD (mg/l)	25	12.5	5.7	0.6	1.8
		COD (mg/l)	—	15	11.1	0.4	5.0
	SS (mg/l)	30	15	4.0	ND	2.8	
	Oil (mg/l)	5	2.5	ND	ND	ND	
	Phenol (mg/l)	5	1	ND	ND	ND	
	Copper (mg/l)	1	0.5	0.12	0.01	0.04	
	Zinc (mg/l)	5	2.5	0.57	0.06	0.31	
	Soluble iron (mg/l)	5	2.5	ND	ND	ND	
	Soluble manganese (mg/l)	5	2.5	ND	ND	ND	
	Chrome (mg/l)	2	1	ND	ND	ND	
	Fluorine (mg/l)	8	6.4	0.3	ND	0.1	
	Colon bacillus (#/cm ²)	3,000	300	9	0	2	
	Total nitrogen (mg/l)	60	15	8.5	1.5	4.6	
	Total phosphorus (mg/l)	8	2	0.03	ND	0.03	
	Cyanide (mg/l)	1	0.2	ND	ND	ND	
	Hexavalent chrome (mg/l)	0.5	0.1	ND	ND	ND	
	Anjo Plant (No.2)	pH	5.8-8.6	6.0-8.5	7.2	6.5	6.9
BOD (mg/l)		25	10	8.0	0.6	1.8	
COD (mg/l)		—	10	9.9	0.6	3.0	
SS (mg/l)		30	10	ND	ND	ND	
Oil (mg/l)		5	2	ND	ND	ND	
Phenol (mg/l)		5	0.2	ND	ND	ND	
Copper (mg/l)		1	0.2	ND	ND	ND	
Zinc (mg/l)		5	2	0.79	0.13	0.43	
Soluble iron (mg/l)		5	2	ND	ND	ND	
Soluble manganese (mg/l)		5	2	ND	ND	ND	
Chrome (mg/l)		2	0.2	ND	ND	ND	
Fluorine (mg/l)		8	2	0.2	ND	0.1	
Colon bacillus (#/cm ²)		3,000	300	39	0	6	
Total nitrogen (mg/l)		60	15	11.6	5.9	9.2	
Total phosphorus (mg/l)		8	2	0.70	0.30	0.50	
Nishio Plant		pH	5.8-8.6	5.8-8.3	8.0	6.6	7.2
		BOD (mg/l)	25	10	3.1	0.1	0.8
		COD (mg/l)	—	10	9.8	1.8	5.3
	SS (mg/l)	30	10	8.8	0.1	1.0	
	Oil (mg/l)	5	2	ND	ND	ND	

Plant	Substance ¹	Legal Limit	DENSO Standard	Actual Measurement ²			
				Maximum	Minimum	Average	
Nishio Plant	Phenol (mg/l)	5	0.5	ND	ND	ND	
	Copper (mg/l)	1	0.5	0.04	ND	0.01	
	Zinc (mg/l)	5	1	0.22	0.01	0.07	
	Soluble iron (mg/l)	10	3	0.1	ND	0.03	
	Soluble manganese (mg/l)	10	3	0.2	ND	0.1	
	Chrome (mg/l)	2	0.1	ND	ND	ND	
	Fluorine (mg/l)	8	5	1.4	0.1	0.5	
	Colon bacillus (#/cm ²)	3,000	300	148	0	7	
	Total nitrogen (mg/l)	60	15	10.5	3.4	6.5	
	Total phosphorus (mg/l)	8	2	0.46	0.04	0.14	
	Hexavalent chrome (mg/l)	0.5	0.05	ND	ND	ND	
	Takatana Plant	pH	5.8-8.6	6.5-8.5	7.7	6.7	7.1
		BOD (mg/l)	25	10	3.2	ND	1.3
		COD (mg/l)	—	10	6.3	1.3	3.0
		SS (mg/l)	30	10	3.6	ND	1.4
		Oil (mg/l)	5	2	ND	ND	ND
		Phenol (mg/l)	5	0.2	ND	ND	ND
		Copper (mg/l)	1	0.2	0.03	ND	0.01
Zinc (mg/l)		5	2	0.23	0.02	0.10	
Soluble iron (mg/l)		5	2	ND	ND	ND	
Soluble manganese (mg/l)		5	2	ND	ND	ND	
Chrome (mg/l)		2	0.2	ND	ND	ND	
Fluorine (mg/l)		8	2	0.2	ND	0.1	
Colon bacillus (#/cm ²)		3,000	300	117	0	6	
Total nitrogen (mg/l)		60	15	13.9	3.6	7.8	
Total phosphorus (mg/l)		8	2	0.17	ND	0.04	
Hexavalent chrome (mg/l)		0.5	0.05	ND	ND	ND	
Daian Plant		pH	5.8-8.6	5.8-8.6	7.8	6.0	6.6
		BOD (mg/l)	25	10	3.2	ND	1.1
	COD (mg/l)	—	10	8.2	0.6	5.1	
	SS (mg/l)	90	10	5.7	ND	1.3	
	Oil (mg/l)	5	2	1.5	ND	1.1	
	Phenol (mg/l)	5	0.2	0.01	ND	0.01	
	Copper (mg/l)	1	0.2	ND	ND	ND	
	Zinc (mg/l)	5	2	0.02	ND	0.02	
	Soluble iron (mg/l)	10	2	0.2	ND	0.2	
	Soluble manganese (mg/l)	10	2	ND	ND	ND	
	Chrome (mg/l)	2	0.4	0.01	ND	0.01	
	Fluorine (mg/l)	8	6.4	2.7	0.5	1.3	
	Colon bacillus (#/cm ²)	3,000	300	15	0	2	
	Total nitrogen (mg/l)	60	15	10.8	6.6	8.3	
	Total phosphorus (mg/l)	8	1.5	0.50	ND	0.13	
	Kota Plant	pH	5.8-8.6	5.8-8.3	7.9	6.7	7.3
		BOD (mg/l)	25	10	1.2	ND	0.6
		COD (mg/l)	—	10	2.5	2.2	2.4
SS (mg/l)		30	10	2.6	ND	1.2	
Oil (mg/l)		2	1	ND	ND	ND	
Phenol (mg/l)		0.5	0.25	ND	ND	ND	
Copper (mg/l)		1	0.5	0.04	ND	0.02	
Zinc (mg/l)		5	1	0.55	ND	0.06	
Soluble iron (mg/l)		10	3	ND	ND	ND	
Soluble manganese (mg/l)		10	3	ND	ND	ND	
Chrome (mg/l)		2	0.1	ND	ND	ND	
Fluorine (mg/l)		8	5	3.3	0.2	1.4	
Colon bacillus (#/cm ²)		3,000	300	3	0	0	
Total nitrogen (mg/l)		60	15	5.0	2.4	3.7	
Total phosphorus (mg/l)		8	2	0.48	ND	0.10	
Toyotashi Plant		pH	5.8-8.6	6.0-8.5	7.9	6.5	7.4
		BOD (mg/l)	—	10	7.4	0.1	0.8
		COD (mg/l)	25	10	8.4	2.1	4.4
	SS (mg/l)	30	10	0.5	0.1	0.1	
	Oil (mg/l)	2	1	ND	ND	ND	
	Phenol (mg/l)	0.5	0.25	ND	ND	ND	
	Copper (mg/l)	1	0.5	0.04	ND	0.01	
	Zinc (mg/l)	5	2.5	0.60	0.02	0.21	
	Soluble iron (mg/l)	10	2.5	0.1	ND	0.04	
	Soluble manganese (mg/l)	10	2.5	0.03	ND	0.01	
	Chrome (mg/l)	2	1	ND	ND	ND	
	Fluorine (mg/l)	15	7	1.6	0.2	0.8	

Plant	Substance ¹	Legal Limit	DENSO Standard	Actual Measurement ²			
				Maximum	Minimum	Average	
Agui Plant	Colon bacillus (#/cm ²)	3,000	1,500	27	0	3	
	Total nitrogen (mg/l)	60	15	13.3	5.8	9.7	
	Total phosphorus (mg/l)	8	2	0.38	ND	0.09	
	pH	5.8-8.6	5.8-8.6	8.0	6.1	7.2	
	BOD (mg/l)	25	12.5	2.9	0.5	1.4	
	COD (mg/l)	—	15	4.7	0.9	3.0	
	SS (mg/l)	30	15	7.5	ND	2.0	
	Oil (mg/l)	2	1	ND	ND	ND	
	Phenol (mg/l)	1	0.5	ND	ND	ND	
	Copper (mg/l)	1	0.5	ND	ND	ND	
	Zinc (mg/l)	5	2.5	0.68	0.05	0.16	
	Soluble iron (mg/l)	5	2.5	ND	ND	ND	
	Soluble manganese (mg/l)	5	2.5	ND	ND	ND	
	Chrome (mg/l)	2	1	ND	ND	ND	
Kitakyushu Plant	Fluorine (mg/l)	8	6.4	ND	ND	ND	
	Colon bacillus (#/cm ²)	3,000	1,500	54	0	4	
	Total nitrogen (mg/l)	60	30	12.2	2.0	6.1	
	Total phosphorus (mg/l)	8	3	ND	ND	ND	
	pH	5.0-10.5	5.8-8.6	8.4	7.2	7.9	
	BOD (mg/l)	1,500	70	3.2	0.5	1.3	
	COD (mg/l)	—	70	7.9	0.8	4.2	
	SS (mg/l)	1,500	20	6.0	0.0	2.3	
	Oil (mg/l)	5	2.5	ND	ND	ND	
	Zinc (mg/l)	5	2.5	0.20	0.02	0.06	
	Soluble iron (mg/l)	10	5	0.15	0.01	0.04	
	pH	5.8-8.6	5.8-8.3	7.7	6.7	7.1	
	BOD (mg/l)	25	10	1.9	0.1	0.5	
	COD (mg/l)	—	10	2.4	ND	1.2	
Zemyo Plant	SS (mg/l)	30	10	1.0	0.1	0.2	
	Oil (mg/l)	2	1	ND	ND	ND	
	Phenol (mg/l)	0.5	0.25	ND	ND	ND	
	Copper (mg/l)	1	0.5	0.04	ND	0.01	
	Zinc (mg/l)	5	1	0.21	0.01	0.10	
	Soluble iron (mg/l)	10	2.5	0.04	ND	0.01	
	Soluble manganese (mg/l)	10	2.5	0.03	ND	0.01	
	Chrome (mg/l)	2	0.1	ND	ND	ND	
	Fluorine (mg/l)	8	6.4	0.2	ND	0.1	
	Colon bacillus (#/cm ²)	3,000	300	5	0	0	
	Total nitrogen (mg/l)	60	10	4.4	1.4	3.2	
	Total phosphorus (mg/l)	8	1	0.06	ND	0.02	
	Hiroshima Plant	pH	—	5.8-8.6	8.6	6.5	7.2
		COD (mg/l)	—	15	12.2	1.1	4.2
SS (mg/l)		—	15	11.1	ND	2.2	
Oil (mg/l)		—	2.5	ND	ND	ND	
Phenol (mg/l)		—	1	0.01	ND	0.01	
Copper (mg/l)		—	1	ND	ND	ND	
Zinc (mg/l)		—	2.5	0.22	0.04	0.11	
Soluble iron (mg/l)		—	2.5	ND	ND	ND	
Soluble manganese (mg/l)		—	2.5	ND	ND	ND	
Chrome (mg/l)		—	1	ND	ND	ND	
Fluorine (mg/l)		—	6.4	0.3	0.2	0.3	
Colon bacillus (#/cm ²)		—	1,500	20	0	9	
Total nitrogen (mg/l)		—	60	4.0	1.2	2.5	
Total phosphorus (mg/l)		—	8	0.20	ND	0.13	
Nukata Testing Center	pH	5.8-8.6	6.5-8.5	7.9	6.7	7.3	
	BOD (mg/l)	25	12.5	2.8	0.6	1.4	
	COD (mg/l)	—	20	4.0	1.4	2.3	
	SS (mg/l)	70	20	10.7	ND	2.5	
	Colon bacillus (#/cm ²)	3,000	100	38	0	5	
	Total nitrogen (mg/l)	60	1	0.8	0.3	0.4	
	Total phosphorus (mg/l)	8	3	0.02	ND	0.02	
DENSO Research Laboratories	pH	5.8-8.6	5.8-8.6	7.8	5.9	7.0	
	BOD (mg/l)	25	12.5	5.0	0.6	2.0	
	COD (mg/l)	—	15	4.6	0.4	1.9	
	SS (mg/l)	30	15	2.6	ND	1.2	
	Oil (mg/l)	2	1	ND	ND	ND	
	Phenol (mg/l)	1	0.5	ND	ND	ND	
	Copper (mg/l)	1	0.5	ND	ND	ND	
	Zinc (mg/l)	5	2.5	0.04	ND	0.02	
	Soluble iron (mg/l)	10	2.5	ND	ND	ND	
	Soluble manganese (mg/l)	10	2.5	ND	ND	ND	
	Chrome (mg/l)	2	1	ND	ND	ND	
	Fluorine (mg/l)	8	6.4	5.7	0.3	1.8	
	Colon bacillus (#/cm ²)	3,000	1,500	123	0	17	

Plant	Substance ¹	Legal Limit	DENSO Standard	Actual Measurement ²		
				Maximum	Minimum	Average
ASMO Headquarters	Total nitrogen (mg/l)	60	20	14.1	2.8	7.6
	Total phosphorus (mg/l)	8	3	0.03	ND	0.02
	pH	5.8-8.6	6.0-8.4	7.6	6.5	7.2
	BOD (mg/l)	20	10	4.7	ND	0.8
	COD (mg/l)	20	10	5.1	3.3	4.1
	SS (mg/l)	30	10	1.2	ND	ND
	Oil (mg/l)	5	1.5	ND	ND	ND
	Phenol (mg/l)	0.2	0.15	0.02	ND	ND
	Copper (mg/l)	1	0.4	0.03	ND	0.01
	Zinc (mg/l)	1	0.4	0.09	0.03	0.05
	Soluble iron (mg/l)	10	4	ND	ND	ND
	Soluble manganese (mg/l)	10	5	ND	ND	ND
	Chrome (mg/l)	0.4	0.08	ND	ND	ND
	Fluorine (mg/l)	8	4	ND	ND	ND
	Colon bacillus (#/cm ²)	3,000	300	6	0	2.3
	Total nitrogen (mg/l)	120	25	15.9	5.3	8.7
	Total phosphorus (mg/l)	16	2	0.27	0.06	0.18
	Nickel (mg/l)	—	0.5	ND	ND	ND
	Hexavalent chrome (mg/l)	0.1	0.05	ND	ND	ND
	Cadmium (mg/l)	0.002	0.002	ND	ND	ND
Lead (mg/l)	0.1	0.01	ND	ND	ND	
ASMO Toyohashi Plant	pH	5.8-8.6	6.0-8.4	7.8	6.7	7.2
	BOD (mg/l)	25	10	2.1	ND	1
	COD (mg/l)	25	12	6.3	4.1	5.1
	SS (mg/l)	30	12	ND	ND	ND
	Oil (mg/l)	2	1.5	ND	ND	ND
	Phenol (mg/l)	0.5	0.3	0.02	ND	ND
	Copper (mg/l)	1	0.4	ND	ND	ND
	Zinc (mg/l)	5	2	0.05	0.02	0.03
	Soluble iron (mg/l)	10	4	ND	ND	ND
	Soluble manganese (mg/l)	10	5	ND	ND	ND
	Chrome (mg/l)	2	1	ND	ND	ND
	Fluorine (mg/l)	8	4	0.3	ND	ND
	Colon bacillus (#/cm ²)	3,000	150	3	ND	0.9
	Total nitrogen (mg/l)	120	15	9.1	3	6.1
Total phosphorus (mg/l)	16	1.5	0.06	0.02	0.04	
Hexavalent chrome (mg/l)	0.5	0.05	ND	ND	ND	
Cadmium (mg/l)	0.1	0.002	ND	ND	ND	
Lead (mg/l)	0.1	0.01	ND	ND	ND	
DAISHINSEKI CO., LTD.	pH	5.8-8.6	5.8-8.6	7.5	6.9	7.1
	BOD (mg/l)	12.5	12.5	1.5	0.9	3.5
	COD (mg/l)	25	25	12	6.1	8.1
	SS (mg/l)	15	15	1	1	1
	Oil (mg/l)	2	2	0.5	0.5	0.5
GAC CORPORATION Toyoshina Plant	pH	5.8-8.6	5.8-8.6	7.3	6.9	7.2
	BOD (mg/l)	160	30	7.0	1.4	4.55
	COD (mg/l)	—	160	12.0	4.4	7.625
	SS (mg/l)	200	50	6	3	4.75
	Oil (mg/l)	5	5	3.7	0.8	1.65
	Hexavalent chrome (mg/l)	0.5	0.3	ND	ND	ND
Lead (mg/l)	0.1	0.1	0.005	ND	0.0013	
GAC CORPORATION Hotaka Plant	pH	5.8-8.6	5.8-8.6	7.5	7.3	7.3
	BOD (mg/l)	160	30	4	2.1	2.7
	COD (mg/l)	—	160	5.6	2.2	3.8
	SS (mg/l)	200	50	3	2	2.7
DENSO AIRS CORPORATION Takahama Plant	Oil (mg/l)	5	5	1	0.6	0.8
	Lead (mg/l)	0.1	0.1	ND	ND	ND
	pH	5.8-8.6	5.8-8.6	7.5	6.5	7.1
	BOD (mg/l)	160	10	0.5	0.5	0.5
DENSO AIRS CORPORATION Toyohashi Plant	COD (mg/l)	160	10	5.1	3.8	4.5
	SS (mg/l)	200	10	3	1	2
	Oil (mg/l)	5	2	1	1	1
	pH	5.8-8.6	5.8-8.6	7.5	6.5	7.2
DENSO AIRS CORPORATION Toyokawa Plant	BOD (mg/l)	160	20	0.6	—	0.6
	COD (mg/l)	160	15	1.9	—	1.9
	SS (mg/l)	200	20	1	—	1
	Oil (mg/l)	5	2	1	—	1
	pH	5.8-8.6	5.8-8.6	7.5	6.5	7.3
	BOD (mg/l)	160	20	0.7	—	0.7
	COD (mg/l)	160	15	2.5	—	2.5
	SS (mg/l)	200	20	1	—	1
	Oil (mg/l)	5	2	2	—	2
	pH	5.8-8.6	5.8-8.6	7.0	6.8	6.9
	BOD (mg/l)	20	15	15.0	1.9	6.8

Plant	Substance ¹	Legal Limit	DENSO Standard	Actual Measurement ²		
				Maximum	Minimum	Average
DENSO KIKO CO., LTD.	COD (mg/l)	25	20	11.8	4.5	7.7
	SS (mg/l)	25	15	9.0	1.0	4.0
	Oil (mg/l)	2	2	ND	ND	ND
	Boron (mg/l)	1	1	0.05	0.03	0.04
DENSOTRIM CO., LTD.	pH	5.8-8.6	5.9-8.5	7.5	7.5	7.5
	BOD (mg/l)	160	144	20	4	12
	COD (mg/l)	160	144	21	18	20
	SS (mg/l)	200	180	10	7	9
	Oil (mg/l)	5	4.75	ND	ND	ND
	pH	5.8-8.6	6.3-8.1	7.5	7	7.2
KYOSANDENKI CO., LTD. Plant 1	BOD (mg/l)	40	24	21.3	3.8	8.1
	COD (mg/l)	40	24	21.5	3	7.4
	SS (mg/l)	65	39	8	1.2	3.8
	Oil (mg/l)	5	3	0.5	ND	ND
	Cyanide (mg/l)	1	0.6	ND	ND	ND
	Hexavalent chrome (mg/l)	0.5	0.3	ND	ND	ND
	Cadmium (mg/l)	0.1	0.06	ND	ND	ND
	Fluorine (mg/l)	8	4.8	0.33	0.33	0.33
	Lead (mg/l)	0.1	0.06	ND	ND	ND
	pH	5.8-8.6	6.3-8.1	7.2	6.7	7
	BOD (mg/l)	25	15	13.3	6.2	11.7
COD (mg/l)	25	15	14.8	11.3	13.4	
SS (mg/l)	40	24	10.4	2.4	4.4	
Oil (mg/l)	5	3	2.4	ND	ND	
Cyanide (mg/l)	1	0.6	0.089	0.01	0.062	
Hexavalent chrome (mg/l)	0.5	0.3	ND	ND	ND	
Cadmium (mg/l)	0.1	0.06	ND	ND	ND	
Fluorine (mg/l)	8	4.8	0.96	0.96	0.96	
Lead (mg/l)	0.1	0.06	ND	ND	ND	
Boron (mg/l)	10	6	0.06	0.06	0.06	
*Ammonia, nitrate nitrogen	100	60	18.1	18.1	18.1	
ANDEN CO., LTD. Headquarters Plant	pH	6.5-7.8	6.5-7.8	7	6.5	7.2
	BOD (mg/l)	20	20	5.4	2.6	4.2
	COD (mg/l)	20	20	14	6.9	10.7
	SS (mg/l)	20	20	1.4	0.4	0.9
	Oil (mg/l)	4	4	1.1	0.3	0.48
	pH	6.5-7.8	6.5-7.8	7.2	6.8	7
ANDEN CO., LTD. Okazaki Plant	BOD (mg/l)	10	10	4.3	2.3	3.8
	COD (mg/l)	10	10	7.8	2.6	6.4
	SS (mg/l)	10	10	0.9	0.2	0.4
	Oil (mg/l)	2	2	0.7	0.2	0.38
	pH	5.8-8.6	5.8-8.6	7.8	7.08	7.6
HAMANAKODENSO CO., LTD. Headquarters (Sewerage)	BOD (mg/l)	30	20	ND	ND	ND
	COD (mg/l)	30	15	11.95	7.95	9.65
	SS (mg/l)	40	15	1.05	0.15	0.43
	Oil (mg/l)	5	3	0.99	0.46	0.74
	pH	5.8-8.6	5.8-8.6	7.91	7.41	7.6
BOD (mg/l)	30	20	4.1	1.2	2.06	

Plant	Substance ¹	Legal Limit	DENSO Standard	Actual Measurement ²		
				Maximum	Minimum	Average
HAMANAKODENSO CO., LTD. Headquarters (Surface Processing)	COD (mg/l)	30	25	10.2	8.48	9.1
	SS (mg/l)	40	30	4.43	1.05	2.63
	Oil (mg/l)	5	3	1.05	0.54	0.79
	Copper (mg/l)	1	0.5	0.07	0.03	0.05
	Zinc (mg/l)	1	0.75	0.64	0.31	0.42
	Soluble iron (mg/l)	10	1	0.28	0.09	0.16
	Chrome (mg/l)	0.4	0.2	ND	ND	ND
	Nickel (mg/l)	2	1	0.09	0.05	0.06
	Hexavalent chrome (mg/l)	0.5	0.3	0.01	ND	0.0045
	pH	6.0-8.5	6.2-8.2	7.84	7.37	7.6
HAMANAKODENSO CO., LTD. Headquarters (Kibi Plant)	BOD (mg/l)	10	5	ND	ND	ND
	COD (mg/l)	10	8	7.51	3.86	4.73
	SS (mg/l)	10	3	0.51	0.29	0.4
	Oil (mg/l)	3	2	1.12	0.42	0.71
	pH	5.7-8.7	5.7-8.7	7.1	6.5	7.1
DENSO PREAS CO., LTD. Headquarters	BOD (mg/l)	300	300	86	—	86
	COD (mg/l)	—	—	—	—	—
	SS (mg/l)	300	300	5	—	5
	Oil (mg/l)	5	5	ND	—	ND
	SS (mg/l)	—	—	12	6	9
DENSO MANUFACTURING MICHIGAN, INC.	Oil (mg/l)	100	100	20	12	16
	Copper (mg/l)	1	1	0.56	ND	0.131
	Zinc (mg/l)	1.36	1.36	0.35	0.01	0.068
	Chrome (mg/l)	1.5	1.5	0.09	0.01	0.033
	Total phosphorus (mg/l)	—	—	14.5	7.72	11.11
	Hexavalent chrome (mg/l)	0.5	0.5	0.09	0.01	0.033
	Lead (mg/l)	0.2	0.2	0.17	0.003	0.044
	BOD (mg/l)	—	—	54	40	47
	SS (mg/l)	—	—	74	56	65
	Oil (mg/l)	—	—	220	13	83
DENSO MANUFACTURING TENNESSEE, INC. 601,701 Plant	Phenol (mg/l)	3.61	3.61	0.062	0.062	0.062
	Copper (mg/l)	0.72	0.72	0.36	0.011	0.069
	Zinc (mg/l)	1.8	1.8	0.66	0.1	0.417
	Chrome (mg/l)	1.5	1.5	0.064	0.0024	0.322
	Nickel (mg/l)	1.01	1.01	0.036	0.018	0.0235
	Cyanide (mg/l)	0.42	0.42	0	0	ND
	Cadmium (mg/l)	0.01	0.01	0	0	ND
	Lead (mg/l)	0.09	0.09	0.0084	0.0061	0.00716
	Phenol (mg/l)	6.69	6.69	0.062	0.062	0.062
	Copper (mg/l)	3.38	3.38	0.36	0.011	0.069
DENSO MANUFACTURING TENNESSEE, INC. 101 Plant	Zinc (mg/l)	2.61	2.61	0.66	0.1	0.417
	Soluble iron (mg/l)	10	10	0	0	0
	Chrome (mg/l)	2.77	2.77	0.064	0.0024	0.0322
	Nickel (mg/l)	2.69	2.69	0.036	0.018	0.0235
	Cyanide (mg/l)	1.2	1.2	0	0	ND
	Cadmium (mg/l)	0.11	0.11	0	0	ND
	Lead (mg/l)	0.69	0.69	0.0084	0.0061	0.00716

* 1. pH : Hydrogen ion concentration
 BOD : Biochemical Oxygen Demand
 COD : Chemical Oxygen Demand
 SS : Concentration of suspended solids in water

* 2. ND : Not Detected (below detection limit)

* 3. Facilities below a specified size (excluded under legal and other regulations) are not included.

Air Pollution Data

Plant	Type of Facility	Substance ¹	Legal Limit	DENSO Standard	Actual Measurement (Maximum) ²
DENSO Headquarters	Boiler	P.M. (g/Nm ³)	0.1	0.1	0.035
		NOx (ppm)	150	150	60
		SOx (-) (K value)	1.75	1.75	0
	Gas turbine	P.M. (g/Nm ³)	0.05	0.05	0.003
		NOx (ppm)	50	50	16
Ikeda Plant	Boiler	P.M. (g/Nm ³)	0.1	0.1	0.063
		NOx (ppm)	230	230	70
		SOx (-) (K value)	1.75	1.75	0.07
	Thermal cleansing	P.M. (g/Nm ³)	0.2	0.2	0.029
		NOx (ppm)	250	250	13
		SOx (-) (K value)	1.75	1.75	0
		Total dioxins (ng-TEQ/ Nm ³)	20	20	0
Anjo Plant	Boiler	P.M. (g/Nm ³)	0.3	0.3	0.020
		NOx (ppm)	230	230	158
		SOx (-) (K value)	17.5	17.5	0.22
	Melting furnace	P.M. (g/Nm ³)	0.2	0.2	0.012
		NOx (ppm)	230	230	126
		SOx (-) (K value)	4.67	4.67	0
		Total dioxins (ng-TEQ/ Nm ³)	20	20	0
	Incinerator	P.M. (g/Nm ³)	0.5	0.5	0.084
		NOx (ppm)	230	230	15
		SOx (-) (K value)	17.5	17.5	0.01
		HCl (g/Nm ³)	700	700	10.4
		Total dioxins (ng-TEQ/ Nm ³)	80	80	0.0011
	Gas turbine	P.M. (g/Nm ³)	0.05	0.05	0.002
NOx (ppm)		50	50	32	
SOx (-) (K value)		17.5	17.5	0	
Total dioxins (ng-TEQ/ Nm ³)		20	20	0	
Nishio Plant	Boiler	P.M. (g/Nm ³)	0.25	0.25	0.072
		NOx (ppm)	230	210	121
		SOx (-) (K value)	17.5	17.5	3.89
	Melting furnace	P.M. (g/Nm ³)	0.2	0.2	0.002
		NOx (ppm)	180	170	5
		SOx (-) (K value)	17.5	17.5	0
		Total dioxins (ng-TEQ/ Nm ³)	20	20	0.0037
	Carbonization furnace	P.M. (g/Nm ³)	0.2	0.2	0
		NOx (ppm)	150	150	0
		SOx (-) (K value)	17.5	17.5	0
	Gas turbine	P.M. (g/Nm ³)	0.05	0.05	0.002
		NOx (ppm)	70	50	30
	Annealing furnace	SOx (-) (K value)	17.5	17.5	0
		P.M. (g/Nm ³)	0.2	0.2	0.001
		NOx (ppm)	180	180	14
SOx (-) (K value)		17.5	17.5	0	
Toyohashi Plant	Boiler	P.M. (g/Nm ³)	0.25	0.25	0.004
		NOx (ppm)	210	210	95
		SOx (-) (K value)	2.92	2.92	0.06
	Gas turbine	P.M. (g/Nm ³)	0.05	0.05	ND
		NOx (ppm)	50	50	17
Agui Plant	Boiler	SOx (-) (K value)	2.92	2.92	0
		P.M. (g/Nm ³)	0.25	0.25	0.078
		NOx (ppm)	110	110	77
	Melting furnace	SOx (-) (K value)	17.5	17.5	2.70
		P.M. (g/Nm ³)	0.2	0.2	0.005
		NOx (ppm)	100	100	39
		SOx (-) (K value)	17.5	17.5	0
	Incinerator	Total dioxins (ng-TEQ/ Nm ³)	20	20	0.3400
		P.M. (g/Nm ³)	0.25	0.25	0.110
		NOx (ppm)	250	250	64
		SOx (-) (K value)	17.5	17.5	1.55
		HCl (g/Nm ³)	700	700	290
	Kiln	Total dioxins (ng-TEQ/ Nm ³)	80	80	0.0027
		P.M. (g/Nm ³)	0.25	0.25	0.078
		NOx (ppm)	180	180	106
		SOx (-) (K value)	17.5	17.5	0
	Gas turbine	P.M. (g/Nm ³)	0.05	0.05	0.013
NOx (ppm)		70	70	55	
SOx (-) (K value)		17.5	17.5	0	
Boiler	P.M. (g/Nm ³)	0.3	0.15	0	
	NOx (ppm)	180	140	139	

Plant	Type of Facility	Substance ¹	Legal Limit	DENSO Standard	Actual Measurement (Maximum) ²
Kota Plant	Gas turbine	SOx (-) (K value)	17.5	5	0.24
		P.M. (g/Nm ³)	0.05	0.04	0
		NOx (ppm)	70	50	41
	Small incinerator	SOx (-) (K value)	17.5	5	0
		Total dioxins (ng-TEQ/ Nm ³)	80	80	0.0072
Toyohashi Plant	Boiler	P.M. (g/Nm ³)	0.3	0.15	0.031
		NOx (ppm)	180	140	130
		SOx (-) (K value)	8.76	2.34	0.43
	Carbonization furnace	P.M. (g/Nm ³)	0.2	0.1	0
		NOx (ppm)	130	100	ND
	SOx (-) (K value)	8.76	2.34	ND	
Small incinerator	Total dioxins (ng-TEQ/ Nm ³)	80	80	0.0460	
Agui Plant	Boiler	P.M. (g/Nm ³)	0.1	0.05	0.001
		NOx (ppm)	150	140	73
		SOx (-) (K value)	1.75	1.75	0
	Drying furnace	P.M. (g/Nm ³)	0.2	0.2	0.002
		NOx (ppm)	180	180	68
SOx (-) (K value)	1.75	1.75	0		
Kitakyushu Plant	Boiler	P.M. (g/Nm ³)	—	0.05	ND
		NOx (ppm)	—	120	41
		SOx (-) (K value)	—	3.5	0
Zenmyo Plant	Boiler	P.M. (g/Nm ³)	0.05	0.05	0.029
		NOx (ppm)	150	120	100
		SOx (-) (K value)	3	3	0.42
	Gas turbine	P.M. (g/Nm ³)	0.05	0.05	0.003
		NOx (ppm)	70	35	23
SOx (-) (K value)	3	3	0		
Hiroshima Plant	Boiler	P.M. (g/Nm ³)	0.3	0.3	ND
		NOx (ppm)	250	250	104
		SOx (-) (K value)	7	7	0.03
		Total dioxins (ng-TEQ/ Nm ³)	20	20	0
Nukata Testing Center	Boiler	P.M. (g/Nm ³)	0.3	0.3	0.088
		NOx (ppm)	140	140	100
		SOx (-) (K value)	7	7	0.51
DENSO Research Laboratories	Boiler	P.M. (g/Nm ³)	0.05	0.05	0.009
		NOx (ppm)	120	120	41
		SOx (-) (K value)	3	3	0
ASMO Headquarters	Boiler	P.M. (g/Nm ³)	0.25	0.05	0.0024
		NOx (ppm)	130	110	87
		SOx (-) (K value)	17.5	5.0	0.33
	Gas turbine	P.M. (g/Nm ³)	0.05	0.05	0.008
		NOx (ppm)	70	68	32
SOx (-) (K value)	17.5	17.5	1.4		
ASMO Toyohashi Plant	Boiler	P.M. (g/Nm ³)	0.1	0.03	0
		NOx (ppm)	130	110	68
		SOx (-) (K value)	8.76	2	0.0014
DAISHINSEKI CO., LTD.	Boiler	P.M. (g/Nm ³)	0.1	0.1	0.0447894
		NOx (ppm)	140	140	61.3
		SOx (-) (K value)	1.5	1.5	0.009
GAC CORPORATION Toyoshina Plant	Large-scale boiler (FTR-80-8017)	P.M. (g/Nm ³)	0.3	0.3	0.045
		NOx (ppm)	250	250	83
	Small-scale boiler (KMH03A)	SOx (-) (K value)	8.5	8.5	0.90
		P.M. (g/Nm ³)	0.3	0.3	0.018
GAC CORPORATION Hotaka Plant	Boiler	NOx (ppm)	180	180	93
		SOx (-) (K value)	1.4	1.4	0.32
		P.M. (g/Nm ³)	0.1	0.1	0.0036
DENSO AIRS CORPORATION Takahama Plant	Boiler	NOx (ppm)	150	150	75
		SOx (-) (K value)	4.7	4.7	0.0058
		P.M. (g/Nm ³)	—	0.3	0.002
DENSO KIKO CO., LTD.	Drying furnace	NOx (ppm)	—	150	16
		SOx (-) (K value)	—	1.75	0.01
		P.M. (g/Nm ³)	0.3	0.3	0.003
DENSO TAIYO CO., LTD.	Boiler	NOx (ppm)	180	180	13
		SOx (-) (K value)	8.76	8.76	ND
		P.M. (g/Nm ³)	0.3	0.03	0.005
KYOSANDENKI CO., LTD. Plant 1	Boiler	NOx (ppm)	180	150	73
		SOx (-) (K value)	8.76	1.0	0.102
		P.M. (g/Nm ³)	0.3	0.18	0.033
Plant 1	Boiler	NOx (ppm)	180	108	92
		SOx (-) (K value)	11	6.6	2.66

Plant	Type of Facility	Substance ^{*1}	Legal Limit	DENSO Standard	Actual Measurement (Maximum) ^{*2}
KYOSANDENKI CO., LTD. Plant 2	Boiler	P.M. (g/Nm ³)	0.3	0.18	0.038
		NO _x (ppm)	180	108	85
ANDEN CO., LTD.	Boiler	SO _x (-) (K value)	11	6.6	2.63
		P.M. (g/Nm ³)	0.2	0.2	0.027
		NO _x (ppm)	140	140	75
HAMANAKODENSO CO., LTD.	Boiler	SO _x (-) (K value)	17.5	4.67	1.29
		P.M. (g/Nm ³)	0.3	0.3	ND
		NO _x (ppm)	250	250	76
		SO _x (-) (K value)	8.94	8.94	0.03

* 1. NO_x : Nitrogen oxide
SO_x : Sulphur oxide

K value : An index established through local ordinances for limiting the volume of SO_x emissions. K values are lower (more stringent) in regions in which there is concern over the possibility of high concentrations of SO_x.

* 2. The actual measurements shown refer to maximum values with respect to the control values for each particular installation.

N.D.: Not Detected (below detection limit)

* 3. Facilities below a specified size (excluded under legal and other regulations) are not included.

PRTR Data

(Unit: kg/year)

Plant	Substance	Volume Handled	Volume Discharged		Volume Transferred Waste	Volume Recycled	Volume Treated	Volume Consumed	Volume Produced
			Discharge into Atmosphere	Discharge into Water					
DENSO Headquarters	Ethylbenzene	6,800	100	0	0	0	0	6,700	0
	Xylenes	61,300	9,200	0	0	0	0	52,100	0
	Hexavalent chrome compounds	1,700	0	0	1,700	0	0	0	0
	Ethylene glycol monoethyl ether acetate	4,700	4,700	0	0	0	0	0	0
	1,3,5-trimethylbenzene	1,400	0	0	0	0	0	1,400	0
	Toluene	49,000	100	0	0	0	0	48,900	0
	Nickel compounds	1,000	0	0	0	0	0	0	1,000
	Pyrocatechol	2,400	0	0	0	2,400	0	0	0
	Fluorine compounds and other water soluble chlorides	8,100	0	100	0	0	8,000	0	0
Ikeda Plant	Benzene	2,200	0	0	0	0	0	2,200	0
	Ethylbenzene	1,100	0	0	0	0	0	1,100	0
	Xylenes	8,300	0	0	0	0	0	8,200	0
	1,3,5-trimethylbenzene	2,000	0	0	0	0	0	2,000	0
Anjo Plant	Toluene	7,900	0	0	0	0	0	7,800	0
	Zinc water soluble chlorides	1,200	0	0	0	0	1,200	0	0
	Ethylbenzene	2,900	0	0	0	0	0	2,900	0
	Ethylene glycol monoethyl ether	7,900	7,900	0	0	0	0	0	0
	Xylenes	76,300	5,500	0	0	0	0	70,800	0
	Ethylene glycol monoethyl ether acetate	2,800	2,800	0	0	0	0	0	0
	1,3,5-trimethylbenzene	36,300	0	0	0	0	0	36,200	0
	Toluene	29,900	8,700	0	0	0	0	21,200	0
	Lead and its compounds	5,900	0	0	0	200	0	0	5,700
Nishio Plant	Benzene	1,000	0	0	0	0	0	1,000	0
	Molybdenum and other compounds	3,700	0	0	3,700	0	0	0	0
	2-aminoethanethiol	3,000	0	100	0	0	2,900	0	0
	Bisphenol-A epoxy resin (liquid type)	57,900	0	0	0	0	0	0	57,900
	Ethylbenzene	5,500	0	0	0	0	5,500	0	0
	Xylenes	61,200	30,400	0	0	0	0	30,800	0
	Chromium and chromium (III) compounds	7,100	0	0	7,100	0	0	0	0
	Hexavalent chrome compounds	7,100	0	0	0	0	7,100	0	0
	Ethylene glycol monoethyl ether acetate	4,600	4,600	0	0	0	0	0	0
	1,3,5-trimethylbenzene	2,700	0	0	0	0	0	2,700	0
	Toluene	46,900	6,300	0	0	0	0	40,600	0
	Lead and its compounds	28,500	0	0	0	600	0	0	27,900
Takatana Plant	Fluorine compounds and other water soluble chlorides	24,000	0	200	0	0	23,800	0	0
	Benzene	1,800	0	0	0	0	0	1,800	0
	2-aminoethanethiol	21,000	0	0	0	0	21,000	0	0
	Antimony and other compounds	2,300	0	0	0	100	0	0	2,200
	Ethylbenzene	1,100	0	0	0	0	0	1,100	0
	Xylenes	31,100	5,200	0	0	0	0	25,900	0
	Hexavalent chrome compounds	600	0	0	600	0	0	0	0
	1,3,5-trimethylbenzene	13,100	0	0	0	0	0	13,100	0
	Toluene	43,600	35,400	0	0	0	0	8,200	0
Daian Plant	Lead and its compounds	12,900	0	0	0	300	0	0	12,600
	Nickel	1,400	0	0	1,100	0	0	0	300
	2-aminoethanethiol	1,500	0	100	0	0	1,400	0	0
	Xylenes	10,600	3,200	0	0	0	0	7,400	0
	1,3,5-trimethylbenzene	1,900	0	0	0	0	0	1,900	0
	Toluene	7,500	800	0	0	0	0	6,700	0
	Lead and its compounds	11,400	0	0	0	200	0	0	11,200
	Nickel compounds	5,300	0	0	5,300	0	0	0	0
	Phthalic acid (2-ethoxyethylene)	2,000	2,000	0	0	0	0	0	0
Kota Plant	Fluorine compounds and other water soluble chlorides	68,700	0	700	0	0	68,000	0	0
	Boron and its compounds	1,700	0	500	1,200	0	0	0	0
	2-aminoethanethiol	22,800	0	0	200	22,600	0	0	0
Kota Plant	Bisphenol-A epoxy resin (liquid type)	12,100	0	0	0	800	0	0	11,300
	Xylenes	55,900	53,600	0	0	0	0	2,300	0

(Unit: kg/year)

Plant	Substance	Volume Handled	Volume Discharged		Volume Transferred	Volume Recycled	Volume Treated	Volume Consumed	Volume Produced
			Discharge into Atmosphere	Discharge into Water	Waste				
Kota Plant	Toluene	17,300	13,900	0	0	0	0	3,400	0
	Lead and its compounds	57,100	0	0	0	1,100	0	0	56,000
	Pyrocatechol	1,700	0	0	0	1,700	0	0	0
	Fluorine compounds and other water soluble chlorides	25,200	0	300	0	0	24,900	0	0
	Boron and its compounds	1,300	0	0	0	0	1,300	0	0
Toyohashi Plant	2-aminoethanethiol	1,400	0	100	0	0	1,300	0	0
	Ethylene glycol monoethyl ether	6,200	6,200	0	0	0	0	0	0
	2,3-Epoxypropyl phenyl ether	36,500	0	0	0	0	0	0	36,500
	Xylenes	18,400	17,100	0	0	0	0	1,300	0
	Toluene	2,700	800	0	0	0	0	1,900	0
	Lead and its compounds	1,300	0	0	0	0	0	0	1,300
	Nickel compounds	800	0	0	700	0	0	0	0
	Phenol	1,700	0	1,700	0	0	0	0	0
	Lead and its compounds	1,200	0	0	0	0	0	0	1,200
DENSO Research Laboratories	Fluorine compounds and other water soluble chlorides	1,000	0	100	0	0	900	0	0
Nukata Testing Center	Xylenes	5,000	0	0	0	0	0	0	0
	Toluene	7,400	0	0	0	0	0	0	0
ASMO Headquarters	Polymer of 4,4-isopropylidenediphenol and 1-chloro-2,3-epoxypropane (Bisphenol-A epoxy resin) (liquid type)	6,737	0	0	218	0	0	0	6,519
	Ethylene glycol monoethyl ether	1,705	1,705	0	0	0	0	0	0
	Xylenes	1,656	1,593	0	0	0	0	63	0
	2-ethoxyethylene (ethylene glycol monoethyl ether acetate)	5,067	5,067	0	0	0	0	0	0
	Dichloropentafluoropropane (HCFC-225)	4,156	4,156	0	0	0	0	0	0
	1,3,5,7-tetraazatricyclo [3,3,1,13,7] decane (hexamethyl)	78,342	0	0	6,683	0	0	0	71,659
	Toluene	2,644	2,622	0	0	0	0	22	0
	Lead and its compounds	4,898	0	0	0	521	0	0	4,377
	Phenol	19,664	0	0	1,614	0	0	0	18,050
ASMO Toyohashi Plant	Zinc water soluble compounds	1,906	0	13	307	0	57	0	1,529
	Polymer of 4,4-isopropylidenediphenol and 1-chloro-2,3-epoxypropane (Bisphenol-A epoxy resin) (liquid type)	9,563	0	0	340	0	0	0	9,223
	Ethylbenzene	1,060	1,060	0	0	0	0	0	0
	Ethylene glycol monoethyl ether	8,835	8,835	0	0	0	0	0	0
	Xylenes	13,254	13,229	0	0	0	0	25	0
	2-ethoxyethylene (ethylene glycol monoethyl ether acetate)	14,966	14,966	0	0	0	0	0	0
	1,3,5,7-tetraazatricyclo [3,3,1,13,7] decane (hexamethyl)	9,733	0	0	1,181	0	0	0	8,553
	Toluene	8,418	8,418	0	0	0	0	0	0
	Phenol	2,680	0	0	337	0	0	0	2,343
ANDEN CO., LTD.	Xylenes	10,136	10,136	0	0	0	0	0	0
	Toluene	25,000	25,000	0	0	0	0	0	0
	Lead and its compounds	59,700	0	0	0	15,500	0	0	44,200
GAC CORPORATION Hotaka Plant	Xylenes	7,182	7,182	0	0	0	0	0	0
	Toluene	4,243	4,243	0	0	0	0	0	0
KYOSANDENKI CO., LTD. Headquarters	Xylenes	1,893	1,874	0	19	0	0	0	0
	Inorganic cyanide compounds	2,560	0	0	51	0	2,509	0	0
HAMANAKODENSO CO., LTD. Headquarters	Xylenes	1,500	1,500	0	0	0	0	0	0
	Hexavalent chrome compounds	3,100	0	0	0	0	3,038	0	62
DENSO ELECS CO., LTD.	Toluene	1,000	1,000	0	0	0	0	0	0
	Lead and its compounds	1,528	0	0	0	1,126	0	0	402
DENSO AIRS CORPORATION	Xylenes	1,142	1,109	0	33	0	0	0	0
	Toluene	1,488	1,444	0	44	0	0	0	0
NIHON PAKKIN CO., LTD.	Others	2,060	0	0	0	0	0	2,060	0
DENSOTRIM CO., LTD.	Xylenes	1,100	1,080	0	0	20	0	0	0
	Lead and its compounds	15,400	0	0	0	10,461	0	0	4,939
	Others	3,920	0	0	0	243	0	0	3,677
TECHMA CORPORATION	Lead and its compounds	2,240	0	0	0	1,650	0	0	590

* Establishments where the volume of these chemicals is below the legal limit required for reporting are not included.

TRI Data

(Unit: kg/year)

Plant	Substance	On-site								Off-site						Other transfers off-site
		Discharges				Waste				Discharges		Waste				
		Release into atmosphere (stack)	Release into atmosphere (other)	Surface water	Underground discharge	Landfill	Recycled	Energy recovered	Processed	Landfill	Recycled	Energy recovered	Processed	Public processing	Sporadic byproducts	
DENSO WIRELESS SYSTEMS AMERICA, INC.	Lead	0	0	0	0	0	0	0	0	1.1	210.9	0	0	0	0	0
DENSO MANUFACTURING TENNESSEE, INC. Maryville	Copper	0	5.9	0	0	0	0	0	0	0	128,399.2	0	0	4.1	0	0
	Lead	0	1.8	0	0	0	0	0	0	0	6,750.9	0	0	0.9	0	0
	Manganese	0	0.9	0	0	0	0	0	0	0	53,823.3	0	0	45.4	0	0
	Nickel	0	0	0	0	0	0	0	0	0	28,269.7	0	0	24.0	0	0
	Toluene	0	20,822.1	0	0	0	0	0	0	0	0	1,360.8	0	0	0	0
	Xylene	0	19,449.5	0	0	0	0	0	0	0	0	1,360.8	0	0	0	0
DENSO MANUFACTURING TENNESSEE, INC. Athens	Zinc	0	311.2	0	0	0	0	0	0	0	45,597.2	0	0	87.1	0	0
	Chromium	0	0	0	0	0	0	0	0	0	29,401.0	0	0.5	0.5	0	0
DENSO MANUFACTURING MICHIGAN, INC.	Lead	0	0.5	0	0	39.5	0	0	0	0	18.1	0	0	0	0	0
	Chromium compounds	0	12.7	0	0	0	0	0	0	8,926.0	3.2	0	0	82.1	0	0
	Copper	2.5	2.5	0	0	0	0	0	0	2,006.5	36,317.9	0	0	61.2	0	0
	Hydrogen fluoride	103.4	103.4	0	0	0	0	0	12,012.5	243.7	0	0	0	0	0	0
	Lead	0	5.4	0	0	0	0	0	0	624.2	16,379.9	0	0	8.6	0	0
	Manganese	2.0	7.0	0	0	0	0	0	0	135.9	15,276.8	0	0	5.3	0	0
	Nitric acid compounds	0	0	0	0	0	0	0	0	30,495.1	0	0	0	30,495.1	0	0
Nitrogen compounds	2.9	344.0	0	0	0	0	0	30,529.0	457.9	0	0	0	0	0	0	
ASMO NC, Inc.	Ethylene glycol	208.7	35,250.2	0	0	0	0	0	0	0	0	1,218.4	0	0	0	0

Note: Survey of 635 chemical substances covered by the Toxics Release Inventory of the U.S. Environmental Protection Agency.

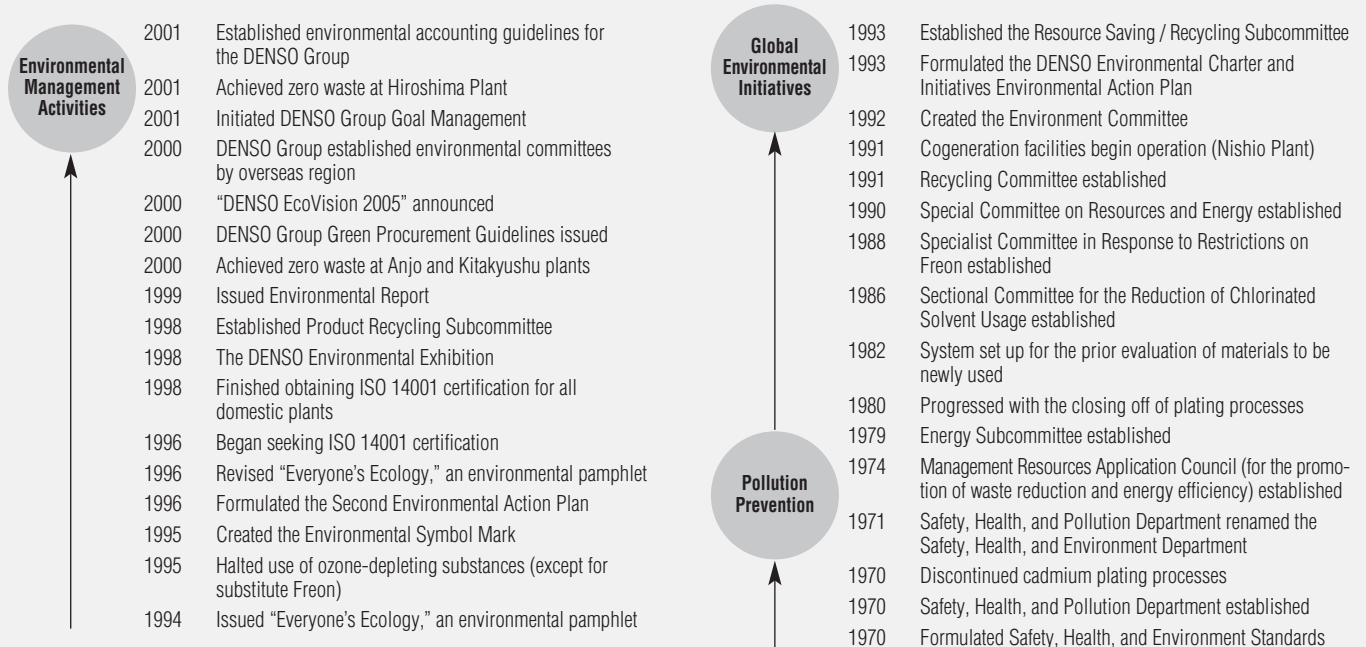
NPRI Data

(Unit: kg/year)

Plant	Substance	On-site								Off-site						Other transfers off-site
		Discharges				Waste				Discharges		Waste				
		Release into atmosphere (stack)	Release into atmosphere (other)	Surface water	Underground discharge	Landfill	Recycled	Energy recovered	Processed	Landfill	Recycled	Energy recovered	Processed	Public processing	Sporadic byproducts	
DENSO MANUFACTURING CANADA, INC.	Nitrogen	0	18,990.3	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: Survey of 268 chemical substances covered by the National Pollutant Release Inventory of Environment Canada.

History of DENSO's Environmental Activities



■ Editorial Policies

The aim of this Environmental Report is to provide the reader with easy-to-understand information regarding DENSO CORPORATION's ideals, goals, activities, and results with regard to the environment. It is directed at a wide audience, including environmental specialists, DENSO suppliers, NPOs, DENSO employees, and investors—anyone with an interest in DENSO's environment-related activities.

This Environmental Report is divided into a main section and a databook. The main section gives easy-to-understand descriptions while the databook endeavors to provide sufficient information to meet the needs of environmental specialists.

To improve the quality of environmental activities and reports, DENSO believes it is essential to receive direct feedback from its shareholders. To this end, the Company has established an Environmental Feedback Committee. DENSO welcomes responses to its Reader Questionnaire by FAX or via the DENSO homepage. All readers are encouraged to share their frank opinions. The comments received by the Environmental Feedback Committee will be taken into consideration when preparing the next DENSO CORPORATION Environmental Report.

■ Period Covered

This Environmental Report was created based on results achieved by DENSO CORPORATION for fiscal 2001, the period from April 1, 2001 to March 31, 2002. However, this report also includes some

results from April 1, 2002 and later, as well as predictions regarding the future.

■ Companies and Business Locations Covered by this Report (28 companies)

Domestic	<ul style="list-style-type: none"> ● DENSO CORPORATION Production and R&D centers DENSO Headquarters, Ikeda Plant, Anjo Plant, Nishio Plant, Takatana Plant, Daian Plant, Kota Plant, Toyohashi Plant, Agui Plant, Kitakyushu Plant, Zenmyo Plant, Hiroshima Plant, Nukata Testing Center, DENSO Research Laboratories ● DENSO Group Production Companies (15/all 16 companies) ASMO Co., Ltd., ANDEN Co., Ltd., DAISHINSEIKI Co., Ltd., KYOSANDENKI Co., Ltd., GAC CORPORATION, HAMANAKODENSO Co., Ltd., DENSO TAIYO Co., Ltd., DENSO AIRS Corporation, DENSO KATSUYAMA CO., Ltd., DENSOTRIM Co., Ltd., DENSO KIKO Co., Ltd., NIHON PAKKIN Co., Ltd., DENSO ELECS Co., Ltd., TECHMA CORPORATION, DENSO PREAS Co., Ltd. <p><i>* The above domestic companies and business locations are included in environmental impact and environmental accounting data.</i></p>
Overseas	<ul style="list-style-type: none"> ● Major North American Production Companies (12 companies/all 33 companies) DENSO SALES CALIFORNIA, INC. (U.S.A.) DENSO MANUFACTURING MICHIGAN, INC. (U.S.A.) AMERICAN INDUSTRIAL MANUFACTURING SERVICES, INC. (U.S.A.) DENSO MANUFACTURING TENNESSEE, INC. (U.S.A.) MICHIGAN AUTOMOTIVE COMPRESSOR, INC. (U.S.A.) TBDN TENNESSEE COMPANY (U.S.A.) ASSOCIATED FUEL PUMP SYSTEMS AMERICA, INC. (U.S.A.) DENSO WIRELESS SYSTEMS AMERICA, INC. (U.S.A.) DENSO MANUFACTURING CANADA, INC. (Canada) DENSO MEXICO S.A. DE C.V. (Mexico) ASMO NORTH AMERICA, LLC (U.S.A.) ASMO GREENVILLE OF NORTH CAROLINA, INC. (U.S.A.) <p><i>* The above overseas companies and business locations are included in environmental impact but not in environmental accounting data.</i></p>

● Scheduled expansion of environmental report
DENSO intends to expand the range of companies covered in its environmental reports to include all consolidated subsidiaries (excluding sub-subsidiaries) by fiscal 2003.

■ Reference Guidelines

This Environmental Report employs the Environmental Reporting Guidelines issued by the Ministry of the Environment and incor-

porates some of the ideas of the Sustainability Reporting Guidelines prepared by the Global Reporting Initiative.

■ The next DENSO environmental report is scheduled to be published in October 2003

■ Additions and Improvements Included in the DENSO CORPORATION Environmental Report 2001

- Compatibility: To meet the needs of both general readers and environmental specialists, we
 - (1) Divided the report into an easy-to-understand main section and a databook
 - (8) Included highlights, etc., on the section title pages,
 - (9) Included plans and results for fiscal 2001 under each major activity
- Reliability: To provide accurate information necessary to readers, we
 - (2) Expanded the range covered by this report to 15 production and development sites in Japan and 12 production sites overseas,
 - (3) Improved information on environmental management organizations (page 8),
 - (4) Added environmental risk management information (page 9),
 - (5) Added human resources to work on social aspects (page 31), and
 - (6) Added homepage addresses for related information
- Clarity: To make the Environmental Report easy-to-understand, we
 - (7) Improved flow charts to show environmental impact and actions taken (pages 4-5)
 - Comparability: To facilitate comparison between businesses on a year-on-year basis, we
 - (10) Included charts with environmental performance data in the databook (pages 36-37),
 - (11) Added results, evaluation and forecasts for the next fiscal year (page 7)
 - Verification: To benefit from objective opinions and obtain more reliable data, we
 - (12) Added updates on the activities of the Environmental Committee (page 29)
 - Timeliness: To provide timely information, we
 - (13) Included a special feature on recovery of chlorofluorocarbons from car air conditioners (page 20),



● DENSO Environmental Symbol Mark

This environmental symbol was developed in July 1995 and is used on pamphlets and during exhibitions and events to promote DENSO's environmental activities.

The design was created by an in-house designer and expresses the idea that the earth has a heart and lives with vitality and vibrancy in harmony with humankind and nature.

DENSO CORPORATION

Published by: DENSO CORPORATION
Environment Planning Department

For further information, please contact: Facsimile: 81-566-25-4525

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<http://www.denso.co.jp/ENVIRONMENT-e>

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