Production

Environmentally friendly products from environmentally friendly plants

We strive to improve production efficiency while balancing our production systems with the needs of the environment. In the promotion of global business activities, Nissan's manufacturing division considers environmental awareness to be its cornerstone.

Nissan Mexicana : Aguascalientes Plant

The Nissan Production Philosophy

Environmentally conscious craftsmanship is the basis of the Nissan Production Way (NPW), which sees efficient production as an effective means of delivering vehicles to our customers as soon as possible while at the same time reducing environmental impacts.

When building eco-friendly vehicles, Nissan focuses on three critical objectives: "reduction of CO_2 emissions", "effective use of resources", and "reduction of substances with environmental impact". To this end, we collaborate closely with our global network of production bases to coordinate our business activities and ensure they are aligned with these objectives.

▶Managing CO_2 — Reducing CO_2 Emissions

Energy efficiency is imperative to reducing greenhouse gases, in particular the large volumes of CO_2 released during the automobile production process. Nissan works proactively to manage CO_2 emissions from our plants. In our plants, we have increased energy efficiency significantly through the introduction of numerous energy saving measures, including cogeneration systems. We are also adopting new energy sources for production such as the use of wind power at our production plant in the UK, where seven 750kW turbines will supply 7% of the electrical demand at the site. In addition, we incorporate CO_2 reduction into our supply chain through eco-efficient logistics such as the modal shift from road transport to ship and rail to ensure that reduction of CO_2 is actively incorporated into each stage of our business.

▶Recycling of Resources — Effective Use of Resources

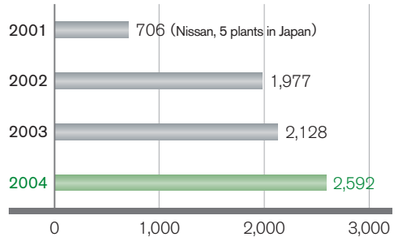
Aware of the need for an effective use of the Earth's precious and finite resources, Nissan has a long history of conducting research on dismantling and recycling end-of-life vehicles. The experience gained through this research has now been linked to activities at the development stage of new vehicles. We pursue automobile production with the aim of generating little to no waste by minimizing all resources used. This process considers steps from the vehicle's design stage to the end of its service life, using joint, cross-departmental approaches. As a result of such efforts, a 100% recycling rate was achieved at the Yokohama plant for fiscal year 2004. Ongoing efforts to improve recycling rates at our production bases worldwide are set to continue.

▶Protecting the Air, Water, and Soil — Reducing Substances with Environmental Impact

A wide range of substances known to have an impact on the environment is used in the production of automobiles. At Nissan, we work to enhance our system for managing these substances, specifically by promoting measures aimed at reducing both the volumes used and the amounts emitted. Special attention is given to volatile organic compounds (VOCs) used in the painting process, which are the substances released most during automobile production. Given the extensive effect VOCs have on the environment, we are currently promoting the use of water-based paint, which contains lower levels of VOCs. In the painting process, we have successfully reduced VOCs from 110g/m² in 1994 to 44.1g/m².

Reducing CO_2 Emissions

● **CO_2 Emissions of Major Global Production Sites** (1,000t-CO_2)



	Japan	North America	Europe	General Overseas Market	Total	Number of sites
2001	706	NA	NA	NA	706	5
2002	1,225	485	171	96	1,977	37
2003	1,249	599	188	92	2,128	38
2004	1,586	669	238	98	2,592	45

* See page 60 for the consolidated subsidiaries included
* Because the values have been rounded off to the first decimal place, there are some cases where the aggregated amount for each item does not agree with the sum total
* NA : No aggregate data available

A large amount of CO_2 is emitted during power generation using fossil fuels. Nissan promotes conservation activities at its plants that aim to make facilities and operational procedures more eco-efficient so that less energy is consumed during the production process.

Promoting Energy Conservation Activities

The total emissions of CO_2 at Nissan's global production bases during fiscal year 2004 amounted to 2.6 million tons, 0.5 million tons over the 2.1 million tons from the previous year. The increase is attributed to a proportionate increase in production and the number of sites, from 38 in 2003 to 45 in 2004.

For Nissan Motor Co., Ltd. alone, CO_2 emissions for fiscal year 2004 amounted to 790,000 tons (a 5.7% decrease from fiscal year 1999, down 38% from 1990). The goal for fiscal year 2005 is to cut emissions by 10 % or more from the 1999 level, which was 826,000 tons.

As the volume of global automobile production increases, it is imperative that CO_2 emissions are lowered. As mentioned above, the goal is to cut fiscal year 2005 emissions by at least 10 percent of the 1999 level at all of our production bases. We are currently establishing global KPIs to evaluate environmental performance.

Environmental Activities > Activities at Plants


Cogeneration systems


On-site incinerator

Panel showing progress of waste reduction

▶NESCO: Nissan's "Energy Service Company" Initiative

In Japan, Nissan produces automobiles at five separate plants. The Nissan Energy Service Company (NESCO) was formed to achieve more efficient energy conservation at these sites. NESCO implements energy-saving methods based on the results of detailed and regular surveys.

During fiscal year 2004, NESCO initiatives focused on optimizing the supply of compressed air and steam to prevent their excess production and to save energy. At present, a considerable number of compressors are in use at all the plants. Last year, a control system was introduced that maintains optimum energy use. While meeting unit production levels, the system also coordinates compressor use to ensure flexible responses to production-line changes and other variables. We have gradually expanded the use of the control system to include all Nissan plants in Japan. At the Kyushu, Iwaki, Oppama, and Tochigi Plants, this has helped reduce CO_2 emissions by 910 tons per year to a total of 790,000 tons.

Nissan is also introducing a control system to streamline the supply of steam. The facility planning department provides instructions and guidance when facilities are replaced to ensure installment of more energy-efficient machines and equipment.

▶Introduction of Cogeneration Systems

Cogeneration is an approach that utilizes the heat produced when generating electricity.
This raises energy efficiency and leads to lasting energy conservation. Nissan is actively adopting these cogeneration systems, with their rate of use increasing steadily every year.

The Nissan Global Approach

Nissan promotes global sharing of information and energy conservation at all production bases. To bolster this cooperation for the systematic reduction of CO_2 emissions, we are moving toward global management of all CO_2 emissions.

▶Global Energy Benchmark Meetings

Since 2003, we have held annual meetings on implementing effective energy-conservation policies at all our global production bases. At the 2004 Global Energy Benchmark Meeting, officers from major production bases in Japan, the US, the UK, Spain, and Mexico gathered to exchange information. We discussed the status quo regarding CO_2 emissions and the automobile industry and examples of improvements in the energy-saving measures promoted. The information discussed at the meetings is being used to reduce the generation of CO_2 at our production bases.

▶Introducing Wind Power (UK)

Nissan Motor Manufacturing (UK) Ltd. is situated in Sunderland, in the rich natural environment of the northeast of the United Kingdom. Nissan is introducing a wind power generator as part of an initiative at the plant to make use of renewable sources. Seven 750kW turbines will be installed, which will cover 7% of the site's electricity. The project is expected to reduce CO_2 emissions by approximately 10,000 tons per year.

Effective Use of Resources

Nissan promotes a dual program of resource conservation. Measures are implemented to minimize any generation of waste right from the very beginning of the production stage. This means that minimizing waste is taken into account already during the planning phase of the production process itself and coordinated with extensive resource-recycling steps, which include the systematic sorting and separation of waste throughout the recycling process.

Promoting the "3R"*1 Activities

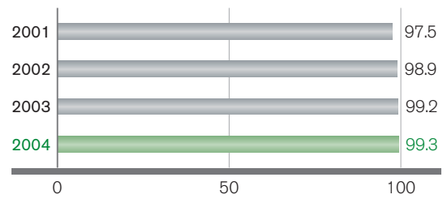
Nissan was able to achieve a recycling rate *2 of 99.3% in fiscal year 2004 in Japan, meaning that diligent promotion of the 3Rs reduced waste to only 0.7% of all materials used. This is the fourth consecutive year that we have met the "zero direct landfill waste" target since the 2001 launch of the standard. (Landfill for 2004 was below 16,299 tons, 1% of the 1990 amount)
Our aim of reducing the volume of waste incineration to 50% or less of the 1999 level 27,900 ton was set for 2005, but already achieved well ahead of schedule.

*1 3R: "reduce," "reuse," and "recycle".
*2 Recycling rate: the percentage of the total amount of waste generated that is recycled, with thermal recovery (heat used to create steam for manufacturing) included in the calculation.

▶Reduce – Curbing the Generation of Waste

Nissan is engaged in capital investment and a wide range of other activities to reduce the volume of waste generated during the production process. Among the innovative ideas currently implemented are use of returnable palettes, longer service life for materials, and spraying the cutting oil in mist form to reduce the volume.

●Recycling Rate (%) nonconsolidated



▶Reuse – Reusing Waste

Efforts at reusing include the collection and repeated use of protective cover for parts, which in the past was disposed of after use. The goal is to steadily expand the range of parts and materials being reused at plants throughout Japan and at overseas facilities.

▶Recycle – Recycling Waste

Nissan promotes effective recycling through the thorough and detailed segregating of about 100 types of waste. As a result, a 100% recycling rate was achieved at our Yokohama plant for fiscal year 2004. Our next goal is to achieve 100% recycling in fiscal year 2005 at the Kyushu and Iwaki Plants.

The Nissan Global Approach

Laws and infrastructure are different in each country and the challenge for Nissan has been to find optimum ways to reduce waste at each of our production bases. We are redoubling our commitment to improve recycling rates globally.

Water-base paint

Proper management of chemical substances

Reducing Substances with Environmental Impact

It is Nissan's responsibility to prevent our production processes from causing air, water, or soil pollution. We make every possible effort to prevent any negative impact on surrounding areas and local residents. To this end, we provide our employees in Japan and abroad with emergency training based on ISO14001 to limit any damage in the case of an oil discharge or related accident.

Controls More Demanding than the Law

▶Air pollution prevention

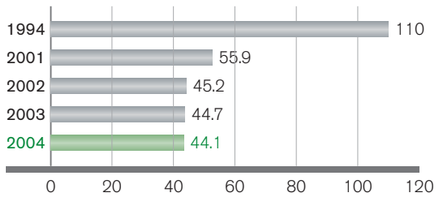
Nissan has moved fast to adopt effective measures that reduce the emission of air pollutants (NOx, SOx) from our plants. Our emissions level in Japan has been reduced to about one-fourth of the 1970 level.

At present, our challenge is to reduce the presence of volatile organic compounds (VOCs), a category that makes up 90% of all chemicals emitted during automobile production. Nissan has worked hard to comply with regulations even before they are introduced in each respective country of operation, raising our VOCs collection rates and reducing the volumes emitted outside the plants, in addition to cutting down on overall VOCs use.

To reduce VOCs volumes, Nissan is systematically converting to water-based paint (a variety characterized by low volumes of VOCs). Opportunities are also being realized to renew facilities and steadily adopt water-based painting lines. The paint line at our Tochigi plant, for example, converted to water-based painting equipment already in fiscal year 2004.

nonconsolidated

●VOCs Release per Painted Area (g/m²)



▶Prevention of water pollution

Nissan is working hard to reduce and recycle the water being used in the production process by treating and purifying wastewater. At the Oppama Plant, for example, water quality sensors have been installed in the overflow outlets in the plant's wastewater treatment facility, enabling automatic shutdown of off-site wastewater drainage, in case any irregularities are detected. These kinds of proactive measures are vital in continuing our commitment to the prevention of water contamination.

▶Prevention of soil and groundwater pollution

Each Nissan organizes independent studies of the chemical contents in the local soil and groundwater, as well as the chemicals that have been used at the site itself. The use of chemicals such as tetrachloroethylene, trichloroethylene and 1.1.1 trichloroethylene has been banned for use on local grounds in accordance with environmental regulation standards for VOCs at plants in Japan, North America and Europe. We are currently taking steps to implement these bans at production bases in other regions as well.

Sound Management of Chemical Substances

In Japan, the Pollutant Release and Transfer Register Law (PRTR) requires data reports on the release and transfer of 354 designated chemical substances. At Nissan, we register the chemical substances contained in materials intended for production processes in a tabulation system, where we list data on both the use and emission volumes of each substance. This tabulation system is linked to our purchasing management system, which enables a fully integrated approach to our environmental management. In fiscal year 2004, following implementation in Japan, the US, and the UK, Nissan also introduced the chemical substance management scheme for operations in Mexico.

Establishing Global Management Policies

Each Nissan plant fully complies with the laws in each country of operation, while at the same time taking proactive measures to prevent environmental accidents such as oil or fuel leaks outside the plant.

Despite local differences in legislation and regulations, we believe that applying Nissan's globally integrated standards to each of the countries where we operate enables us to further improve our performance.

●2004 Material Balance Sheet (intake and discharge of resources)

nonconsolidated