In order to reuse valuable parts from vehicles that have reached the end of their service lives, Nissan has a long-standing history of pursuing innovative recycling methods. We cooperate increasingly with recyclers and other stakeholders to find ways of refining the recycling process still further, and we continue to achieve encouraging results.

**Our Approaches to Recycling**

For Nissan as an automaker, raising the recovery rate of end-of-life vehicles (ELVs) remains a high priority, as efficient recycling saves natural resources, reduces the environmental impact of waste-related chemical substances, and reduces waste which would otherwise need landfill area.

Over the years, Nissan has conducted a vast amount of research, aiming at making it easy to recycle our products at the end of their service lives. The experience gained through this research has now been linked to activities at the development stage of new vehicles. This process considers steps from the vehicle's design stage to the end of its service life, applying joint and cross-departmental approaches.

Our aim is to achieve a sustainable automobile society with environmentally friendly recycling. To this end, both design and development aim to facilitate the implementation of the 3Rs. This is why, already at the design and development stages, steps are taken to decrease the use of substances with environmental impact and to adopt designs for recycling. At the production stage, the ultimate goal is the total elimination of waste, a goal we have already achieved at our Yokohama plant. Also, at the sales and service stages, the environmental activities carried out by dealers play an important role such as the Nissan Green Shop, and the Nissan Green Parts initiative where used parts are sold for repairs.

At all of these stages, the approaches focus on the 3Rs — reduce, reuse and recycle. Obviously, recycling demands active collaboration between the various sectors of society and a partnership between those who make the vehicle and those who recycle it is essential.

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For this reason, Nissan employees visit vehicle recycling locations in each country and listen to the people working there to create designs for recycling and to develop technologies with less environmental impact.

**Recycling End of Life Vehicles (ELVs)**

We believe that joint efforts like these, combined with the sharing of information and know-how, is what enables increased synergy across a range of stakeholders and, ultimately, more efficient use of resources.

**End-of-Life Stage Approaches**

- **Vehicle dismantling research**
  - An understanding of the actual conditions at dismantling facilities is essential for improving recovery rates of ELVs. Nissan has been conducting research since 1997 with recyclers to optimize the dismantling of our vehicles.
  - This kind of collaborative effort is an essential part of the recycling process as is the building of partnerships with dismantlers.

  This has led to regular research and testing for the most efficient ELV recycling process, and development of environmentally friendly dismantling methods. Until now, the research has focused primarily on how to appropriately treat used oil, lead and other toxic substances. However, recently, we have further advanced our research and development for the reuse of aluminum, wire harnesses, and other valuable materials.

We have also pursued research in the recycling of plastics, glasses and other materials to reduce related waste volumes and to improve overall recovery rate.

These research results provide valuable feedback for the product design and development division, and are reflected in the final design of our vehicles. The Nissan airbag processing system for example, was developed through such research and has been in active use in Japan under the provisions of the recent Automobile Recycling Law since January, 2005.

- **Aluminum road wheel recycling**
  - One of Nissan’s unique approaches enables us to recycle aluminum road wheels of ELVs without lowering the material quality. We have asked dismantlers in Japan to separate and recover aluminum road wheels from Nissan’s ELVs. This allows us to regain high quality material with few impurities, which can be recycled into important parts such as suspensions. Presently, Nissan recovers and recycles about 100 tons of aluminum road wheels every month.

- **Automobile shredder residue (ASR) recycling**
  - From 1997, prior to the establishment of the Automobile Recycling Law in Japan, Nissan has worked on the basic research of recycling ASR. To solve the presented problem in energy recovery because of its high heat index, we modified part of our waste incineration facilities at the Oppama Plant, tested and achieved solutions to technical problems and started energy recovery of ASR in the fall of 2003.

The Automobile Recycling Law that has come into effect in Japan in January 2005, since which we have processed some 400 tons of ASR per month in Japan.

It was the first time any carmaker had used existing incineration facilities at its own plant to process ASR. The vapor generated by the process will be used for heating in the paint process. The technology and know-how adopted by Nissan could be applied at other waste incinerators, and we are working to share this expertise making the information widely available.
Nissan Approaches at Development, Production and Service Stages

Collaboration with the design division
Since 1996, when Nissan established a recycling promotion department (the first by a Japanese automaker), there has been close collaboration with the design division to create recycle-friendly vehicles. By applying our “Design for Recycling Guidelines” based on know-how gained from ELV dismantling research, we have created designs that take into account the importance of easy recycling. In addition to this, we conduct research and development in a wide range of related areas: dismantle-friendly structures, readily recyclable materials, greater use of recycled materials, reduction of substances with serious environmental impact, and conservation of natural resources. The results of these efforts can now be seen in our new models like the March released in 2003, the Lafesta in 2004, the Note and Serena, and all of our new models from 2005. (See page 31 for Product and Technology Development)

Collaboration with Renault
Nissan teamed up with Renault to develop a recycling simulation system (OPERA), which can simulate vehicle recoverability rate, recycling costs and other vital data at the early stages of vehicle design. OPERA was first introduced in 2003, and is now being actively used to generate optimum designs for recycling.

Activities at Our Plants
To reduce waste from manufacturing, we promote 3R activities (Reduce, Reuse, Recycle). (See page 33 for Manufacturing).

Emerging Issues in the Nissan Global Response

Besides rules and regulations, countries and regions differ in their collection routes, recycling industries, infrastructures, social and economic conditions. At Nissan we believe production should be carried out globally, while ELV processing should be handled locally. That is to say, we issue common design standards worldwide, but ELVs are processed while bearing in mind the actual on-the-ground conditions in each country and region.

For example, a European Union (EU) directive on ELVs issued in 2000 effectively placed responsibility for recycling of these spent vehicles on manufacturers or dealers. Following this, Nissan teamed up with Renault in December 2000 to establish an ELV collection and information network spanning the entire EU region, while maintaining support for our dealerships in each country. Over the last few years, regular meetings have been held annually with our dealers in the EU, providing all necessary assistance to ensure proper responses to the latest laws and regulations.

Our research and surveys of trends in recycling are not limited to Europe, but also cover North America, Latin America, Asia and other regions. With global Nissan policies serving as the foundation, concrete measures in line with the legal systems and industrial conditions of each country will be vital in the coming years. We still have many issues to resolve and dilemmas to work through. With an average time lag of ten years between the development and recycling of a product, social conditions are bound to change in ways that cannot always be predicted. Nissan takes serious account of these and other issues, and works hard to advance all related activities from a proactive and long-term perspective.

ASR recycling facility
ASR: Designated recycling item by Automobile Recycling Law (Japan)
Simulator for easy dismantling

Overview of Recycling Performance (Jan.-Mar. 2005)

<table>
<thead>
<tr>
<th></th>
<th>Volume Received</th>
<th>Volume Recovered</th>
<th>Recovery Rate</th>
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<tbody>
<tr>
<td>ASR</td>
<td>8,247.0 t</td>
<td>5,993.0 t</td>
<td>64.6%</td>
</tr>
<tr>
<td>Airbags</td>
<td>64.6%</td>
<td>1,927.2 t</td>
<td>93.9%</td>
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<tr>
<td>Airbags</td>
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<td>1,927.2 t</td>
<td>100.0%</td>
</tr>
<tr>
<td>CFCs/HFCs</td>
<td>13,042 kg</td>
<td>13,042 kg</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>23,216 t</td>
<td>23,216 t</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Activities
- Reduce waste from manufacturing
- Promote 3R activities (Reduce, Reuse, Recycle)
- Collaborate with Renault
- Develop OPERA simulation system
- Implement 3R activities at our plants

Collaboration: Close collaboration with the design division since 1996 on creating recycle-friendly vehicles.

- OPERA: Recycling simulation system developed with Renault.

Activities: Promotes 3R activities and implements other measures for waste reduction.

Emerging Issues: Addressing global differences in collection routes and recycling infrastructure.

- European Union directive on ELVs.

Strategies: Coordinated global policies and local handling.

- Support for dealerships worldwide.

Future Directions: Addressing ongoing challenges and preparing for future trends in recycling.

- Continuous research and surveys.

- Proactive and long-term approach.

- Global Nissan policies as the foundation.