

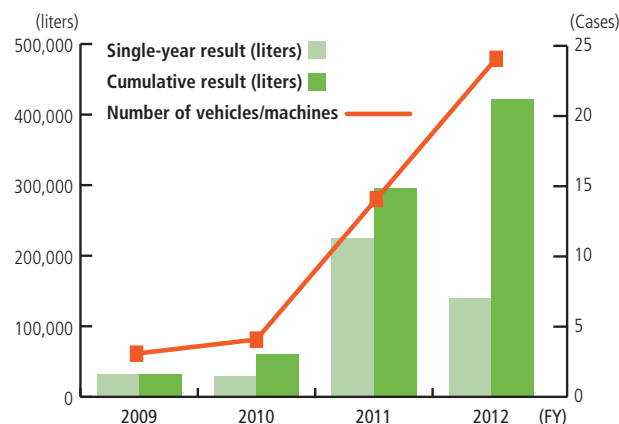
The concrete is used as an outdoor building material in civil engineering projects for concrete blocks and fence foundations. It has also been used in large-scale residential redevelopment projects. The technology has received a great deal of recognition including the Japan Society of Civil Engineers Environmental Award, the Electric Power Civil Engineering Association Takahashi Award, and the Chairman's Award of the 3R Suishin Kyogikai (a 3R promotion association).

■ Bio-diesel fuel reduces CO₂ emissions by 1,000 tons

Since fiscal 2009, Kajima has been using bio-diesel fuel (BDF) to operate heavy equipment and vehicles at construction sites. Made from vegetable oil, BDF is a carbon-neutral fuel that does not increase CO₂ in the atmosphere, and is helping to greatly reduce CO₂ emissions. In fiscal 2012, BDF was

used by six branch offices at 15 construction sites. Kajima's total usage to date is about 420,000 liters, accounting for a reduction in CO₂ emissions of over 1,000 tons.

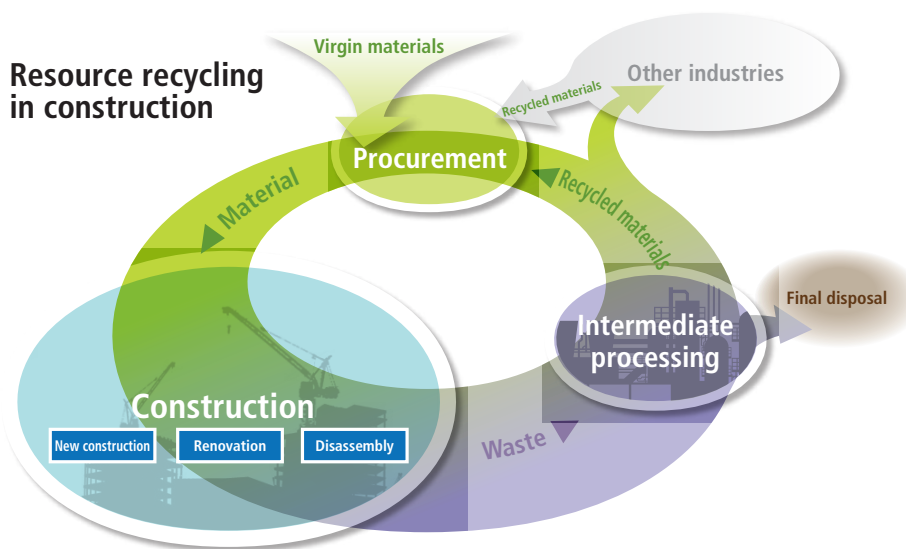
Bio-diesel utilization results



Priority issue 2: Resource recycling and effective use — Aiming for a recycling society

At construction sites, Kajima is striving to reduce the amount of materials and energy used, while also curbing the amount of waste generated and minimizing final disposal amounts. We are also worked to help foster a resource-recycling society. In order to realize this kind of society, the challenge is to reduce CO₂ emissions, while promoting a low-carbon society that exists in harmony with nature.

Resource recycling in construction



Achievements in fiscal 2012

Various initiatives taken brought the company-wide final disposal rate for fiscal 2012 down to 2.8%, surpassing our target of 3%. In the area of green procurement, the usage rate of recycled materials by weight for the five targeted

principal materials (asphalt, crushed stone, cement, concrete, and steel) was 50%. This remained roughly unchanged from fiscal 2011.



03

Reducing environmental impact in procurement

The procurement of materials and heavy equipment is done in the construction planning stage at each worksite. In the building design stage, it is possible to reduce the total amount of materials used by first designing the building to last a long time. Efforts to reduce environmental impact are being promoted from the design stage by considering the building life cycle, including the selection of materials that can be reused after demolition.

Kajima is also committed to materials R&D aimed at contributing to resource recycling. One example is the CO₂-SUICOM concrete described above.

■ Green procurement

Efforts in the upstream design stage are important for the procurement of green construction materials. Promotion of design proposals is included in the medium-term environmental plan (FY2012–2014). There are 95 items on Kajima's green procurement list. In fiscal 2012, 17 priority items were selected for the design stage from the perspective of environmental impact and versatility. Starting in fiscal 2013, the aim is to propose at least four priority items for each design project.

Resource recycling and effective use onsite

Basically, zero emission activities on construction sites involve the reduction of construction waste, and the minimization of the final disposal amount sent to landfills, through the use of waste processing. Initiatives are being promoted in various stages including the simplification of packing before materials are delivered to the construction site, and the detailed sorting of waste materials onsite.

■ Thorough waste management

In November 2012, Kajima's president announced a comprehensive ban on re-consignment of waste collection and transportation, to ensure better risk management.

We are promoting the steady management of waste processing conditions based on electronic manifests. In fiscal 2012, the electronic manifest usage rate exceeded 85%.

More effective resource recycling through inter-industry cooperation

Kajima is promoting resource recycling in cooperation with other industries, while also striving to reduce the use of non-recycled materials and final disposal amounts at each construction site. In our construction business, we receive

waste from other industries as recycled materials, such as blast furnace cement. Recycled materials from our worksites are also supplied to other industries. For effective resource recycling, it is important to strengthen cooperation not only with material manufacturers and waste processors, but also with other industries.

■ Using and promoting manufacturer recycling programs

Kajima is promoting and utilizing manufacturer recycling programs (a wide-area recognition system). This system allows manufacturers recognized by Japan's Minister of the Environment to collect their own used products, such as building material waste and scrap, and to recycle or properly dispose of them. For example used gypsum plasterboard is collected and separated into paper and gypsum powder at the manufacturer's plant. The paper can then be recycled into corrugated board and the powder can be used to make new plasterboard. In addition to gypsum plasterboard, Kajima has used similar programs for ALC, glass wool, and vinyl chloride floor sheets. In our efforts to help create a recycling-oriented society, we feel it is important to cooperate with manufacturers who are striving to achieve a higher level of resource recycling.

■ Using waste cooking oil to make BDF

Toshi Kankyo Engineering Co., Ltd., a Kajima Group company, makes bio-diesel fuel by using recyclable vegetable oil collected mainly from large office and tenanted buildings in metro Tokyo. The company makes high-quality fuel that meets the strict residual carbon standards of the Tokyo Metropolitan Government by adding dehydration and distillation to the regular refining process. Kajima uses this fuel at its construction sites.

Bio-diesel production equipment at Toshi Kankyo Engineering



Waste vegetable oil



Normal bio-diesel



High-quality bio-diesel