

Assessing the overall environmental impact from the design stage

Our group is striving to comprehensively improve its products through a system to assess the environmental impact of products throughout the whole of the product lifecycle.

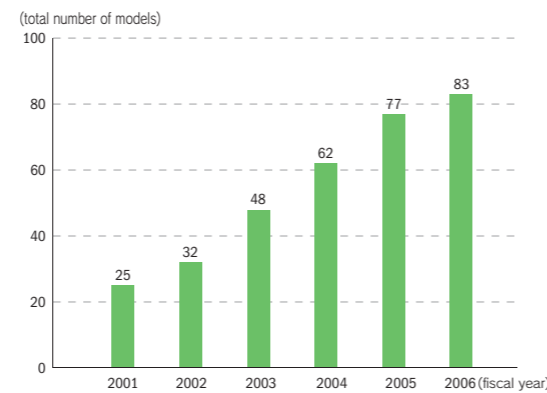
Design-for-environment assessment

Our group is developing environmentally friendly products, considering the environment, from the development stage and products for recycling, taking into consideration the features of its business and products. At the design stage, design-for-environment assessment is performed, consisting of eight criteria: (1) lightweight, (2) durability, (3) recycling factors, (4) ease of dismantling and disposal, (5) environmental conservation factors, (6) energy saving, (7) provision of information, and (8) packaging materials, which comprehensively assesses the impact on the environment of products during the lifecycle of the products in order to reduce the impact caused by their manufacture and use. Products which meet environment-conscious standards are registered as eco-products and may use the eco-mark on websites and in catalogues to enable customers to

identify environmentally friendly products.

The target for FY2006 was adding 18 models to bring the total to 95, but only six models were registered as eco-products, bringing the total to 83.

◆ Number of eco-products registered



● Example of an Eco-product

Ultra-large hydraulic excavator

EX8000 (launched in April 2006) 

- Compliance with EPA Tier 1 exhaust emission regulations
- Longer intervals between regular changes of oil and filters
- Reduction in pressure loss realized by flow-assisting distribution valve system

Mining business continues to flourish. Large excavators are playing important roles at the huge mines in Canada, Australia, Africa, etc. The EX8000 ultra-large hydraulic excavator is the biggest excavator in the world. Its weight is about 800 tons and its height is about 10 meters. One scoop of its 40 cubic meter bucket fills six 11-ton dump trucks.

The EX8000 demonstrates excellent performance and has the durability and mobility to cope with the severe working conditions of mines operating around the clock, to respond to customers' requirements. The engines of this economic excavator comply with Tier 1 exhaust emission regulations of the EPA (Environmental Protection Agency of the USA), incorporate a flow-assisting distribution valve system to reduce pressure loss (saving energy), and have longer intervals between regular changes of oil and filters – so they are registered as eco-products.



Harmony with the Environment driven by Technological Power

Our group is aiming for harmony between construction machinery and the environment. Diverse, wide-ranging achievements from research and development include development of an engine complying with Tier 3 exhaust emission regulations, an electric motor-driven mini excavator and recycling technology.

Sales launch of medium-size hydraulic excavators and wheel loaders

We launched sales of three models of the ZW series wheel loaders in January 2006, and six models of the ZX-3 series medium-size hydraulic excavators in April and June 2006. These wheel loaders and excavators incorporate a new high-capacity engine and a new hydraulic system for high performance with energy saving at the same time. They comply with Tier 3 exhaust emission regulations of Japan, the US and Europe, and meet the Low Noise Construction Machinery Standards of the Ministry of Land, Infrastructure and Transport of Japan, so they are environmentally friendly.

The work capacity of the ZX210-3 (in Japan, ZX200-3) medium-size hydraulic excavator is increased by 12% while, at the same time, fuel consumption is down 13% in an energy saving mode which controls engine speed and torque. In a survey by the Dutch magazine, Bouw Machines, the ZX210-3 came top among 20t-class hydraulic excavators manufactured by ten major construction machinery companies worldwide for its workload and fuel efficiency. This result displays to the world the high level of our technology.



ZX210-3 (ZX200-3 in Japan)

High-performance wood chipper

Wood chippers facilitate on-site-treatment of wood lopped off from roadside trees, etc. Our wood chipper, the ZR30FC, has an original breaking system consisting of a breaking structure equipped with chipper knives and hammer knives, and an exhaust screen. The ZR30FC ef-



ficiently produces high-quality recyclable wood chips. The fan-less conveyor chip discharge system, decreased chipper disk speed and eco-mode setting reduce noise in consideration of the working environment.

Electric motor-driven mini excavator, "2Way Eco-Excavator"

In collaboration with Kajima Road Co., Ltd., we developed an electric motor-driven mini excavator — "2Way Eco-Excavator", which is energy efficient and low noise, for engineering work in built-up areas. This mini excavator runs on commercial power or batteries and has the same capacity as diesel-powered excavators. It significantly reduces CO₂ emissions, running costs and noise (by 6 decibels). The 2Way Eco-Excavator is good for night work in urban areas.



The first hybrid transfer crane in Japan

TCM developed the first hybrid transfer crane in Japan, together with Yasukawa Siemens Automation & Drives Corp., as part of their environmental conservation efforts at container terminals. This transfer crane cuts fuel consumption by 40% by storing energy generated from lowering containers into a dual-layer condenser for reuse in raising containers. The crane requires a smaller engine, thereby cutting exhaust by 40% and noise by 14 decibels.

