

# Product-related Initiatives for the Environment

## Basic Approach

A majority of the products manufactured by the Minebea Group, such as bearings and motors, are components in products sold by our customers, and are not immediately visible. But precisely because our components are incorporated into such a wide variety of products, the Minebea Group believes it is important to offer products that are safe and free from harmful substances that might damage the environment, while contributing to the overall product life cycle by being energy- and resource-efficient as well as long-lasting.

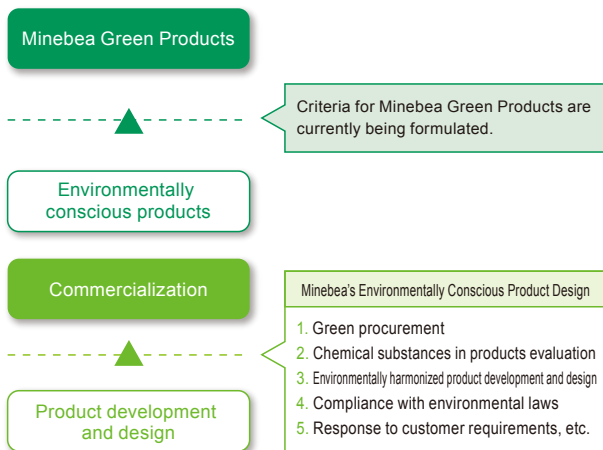
## Minebea Green Products

### What are Minebea Green Products?

From the development and design stages, the products that the Minebea Group manufactures and sells are environmentally conscious products, meaning that they satisfy various countries' environmental laws and customers' environmental requirements as well as undergo voluntary product chemical substance evaluations and product assessments.

We are currently formulating certification standards for Minebea Green Products, which demonstrate superior performance and attributes from the perspectives of energy efficiency, contribution to the prevention of global warming, resource efficiency, and contributions to a recycle-oriented society.

### Selection Process for Minebea Green Products



### Product Example: Aircraft Bearing Requires No Lubricants

In collaboration with the Nagano Prefecture General Industrial Technology Center, the Minebea Group developed a lubricant-free sliding part for an aircraft bearing which has a low coefficient of friction despite requiring no lubricant such as oil. Minebea's highly durable PTFE\* fabric liner and the Nagano Prefecture

General Industrial Technology Center's titanium alloy fortified with carbon nanotube particles were combined to form an exceptionally strong part which demonstrates two-to-three times the life span of conventional products despite being 30% lighter. The product is ideal for contributing to the energy efficiency of aircraft.

\*PTFE(Polytetrafluoroethylene)  
A resin comprised of fluorine atoms and carbon atoms which shows superior heat and chemical resistance.



Lubricant-free sliding part (product image)

### Product Example: Small Digital Converter Module Reduces Energy Consumption by about 85%

The Minebea Group has developed and begun selling a digital converter module, the CSD-892-73, which is one-quarter the size of the Group's previous models and cuts energy consumption by about 85%.

Used in control boards, this digital indicator digitally converts electronic signals from sensors incorporated into factory automation and other equipment and displays the numbers on small modules.

We succeeded in reducing the size and energy consumption of the module by greatly reducing the converter module's operation functions.



Small digital converter module CSD-892-73

## Future Issues and Goals

The Minebea Group will continue to accurately grasp the needs of society to make contributions to the development of safe, energy-efficient, and resource-efficient products.

In FY2012, the Group will continue to formulate criteria for selecting Minebea Green Products.