

## Manufacturing Eco-Friendly Products

As a manufacturer specialized in small DC motors, Mabuchi has developed and supplied innovative motors to the market in response to various needs and in pursuit of the new possibilities of motors. Improving the quality and performance of motors is, needless to say, an integral research theme. However, how to reduce the environmental burden that motors place on the earth, from their production to their disposal, is also becoming a vital research theme.

### R&D on Energy-saving Motors

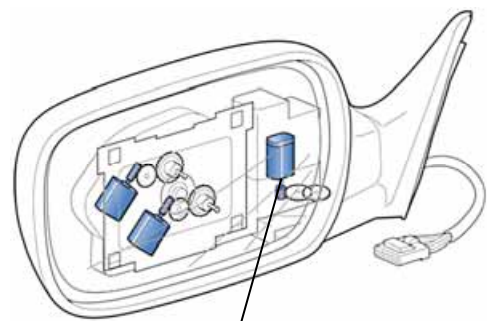
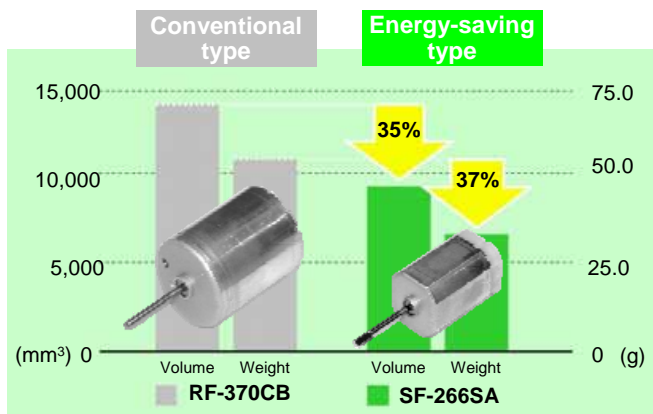
Small motors use less materials and less CO<sub>2</sub> is emitted during their manufacture. These motors, small and lightweight, can also improve fuel efficiency if used in automobiles or put to other uses.

Mabuchi's efforts for small motors began in the audio and visual equipment field in the latter half of the 1980s. In fiscal 2010, we began commercially producing an energy-saving motor, SF-266SA. It is mainly used in electrically controlled car mirrors, one application in the automotive products field.

We manufacture it as a motor that produces little noise by giving attention to the electromagnetic wave environment, the kind of attention to detail increasingly being demanded in the automotive products field. At the same time, it maintains the advantage of reduced CO<sub>2</sub> emissions that conventional small motors have. It is also a quieter motor that makes less operating noise than conventional ones.

We will continue to promote R&D activities aiming to diversify our product lineup of energy-saving motors. Such R&D is based on the magnetic circuit, winding, and parts-technologies we have accumulated as a manufacturer specialized in small DC motors.

#### Energy-saving Motor SF-266SA



Typical application of SF-266SA (Electric control of car mirrors)

### Reduced Packing Materials

When shipping motors to customers, we wrap them using a stretch film to maintain quality during transport and to improve transport efficiency.

However, this film is thrown away and becomes waste after our customers safely receive the product. Therefore, it is a kind of environmental burden associated with the production of our motors.

To reduce this, Jiangsu Mabuchi made various attempts and succeeded in reducing the use of stretch film by 6 tons over the previous years, without diminishing its original purpose and function. This has not only reduced waste but also helped save the Earth's resources.



Packed using an optimized amount of film

## Energy-saving at the Production Sites

**Aiming to preserve the environment and achieve high productivity at the same time, Mabuchi is continuously improving the efficiency of production processes at the factory.**

Compressed air is widely used in various production processes at the factory as a safe, simple, and convenient utility. But because of such excellent usability, it had not been targeted as a key item for which to make energy-saving efforts.

Mabuchi's production staff, however, have put the focus on the energy lost when compressed air is used, and have strived to improve it. They have tried such means as reducing the air flow and using alternative methods.

By searching for optimal means, they found that CO<sub>2</sub> emissions can be reduced and energy can be saved if the existing air blowing system that is based on compressed air is replaced with an alternative method. Two successful cases are shown below.



The blower and peripheral components

### Case 1: Using a blower to remove powder

A large volume of compressed air has been used to blow off the powder that clings to the motor rotors before applying an insulation coating to them. If this air blowing system is replaced with a blower that can supply low-pressure air at high velocity, it needs less energy (electricity) to work.

We found the most appropriate shape of the blow nozzle for our workpieces and production equipment, and introduced this blower to the commercial production lines at factories in China. We will install this blower for the insulation coating machine at all production bases in stages.

**Environmental effect per unit  
CO<sub>2</sub> reduction: 23.7 t-CO<sub>2</sub>/year**

### Case 2: Using an axial fan to cool workpieces

We explored the possibility of using an axial fan to cool workpieces instead of using compressed air. When we measured their temperature, we found that the workpieces were sufficiently cooled with this fan. It is currently being introduced in all production bases.

**Environmental effect per unit  
CO<sub>2</sub> reduction: 5.6  
t-CO<sub>2</sub>/year**



**Before: workpieces were cooled  
with compressed air**



**After: workpieces are cooled  
with an axial fan**

These improvements were made possible thanks to the efforts of staff members directly related to the production lines.

They came up with the idea and enhanced it by changing the way they thought about energy-saving issues. This is a small step for improving our work. Nevertheless it is a good example of how changing the way all employees think about work and taking different approaches can speed up both environmental conservation and production efficiency. We are sure that it will lead to further improvements.