Realizing a Low-carbon Society

Within the material issues identified in fiscal 2017, we have designated “the realization of a low-carbon society (product-based contributions)” and “the realization of a low-carbon society (business activities)” as particularly important. These entail, respectively, reducing CO_2 emissions by providing products with better environmental performance and reducing CO_2 emissions through such initiatives as energy-saving in manufacturing processes. We are advancing corporate activities accordingly.

Below is a look at Kawasaki’s achievements related to these–CO_2 reduction through product-based contributions and business activities–in fiscal 2018, as well as a review of the results of the activities of the recently concluded Ninth Environmental Management Activities Plan (fiscal 2016 to 2018) and the key initiatives of the new 10th Environmental Management Activities Plan (fiscal 2019 to 2021).

Realization of a Low-carbon Society: Product-based Contributions

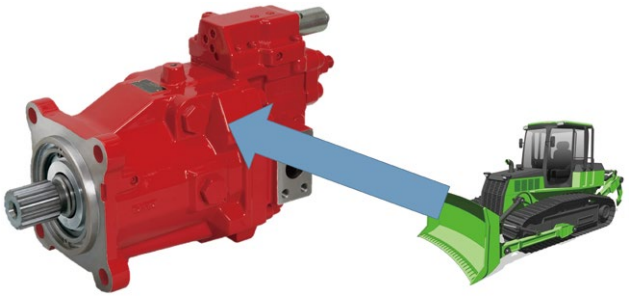
About 90% of CO_2 emitted during the life cycles of our products is released during their use after they are sold. The Company therefore seeks to realize a low-carbon society by providing products that emit less CO_2 during use. In fiscal 2017, we established new rules for calculating the CO_2 emissions reduction achieved through product-based contributions in order to better quantify the contributions of highly energy efficient products to the mitigation of global warming.

Calculations based on these rules found that the CO_2 emissions reduction through products Kawasaki sold (non-consolidated basis) in fiscal 2018 was approximately 29.1 million tons. Large contributions were made by such products as the Green Gas Engine, which boasts world-leading power-generation efficiency, and the M7V Series motors for HSTs,[1] both of which are Kawasaki-brand Green Products.[2]

Fiscal 2018 Result (non-consolidated)
Reduction of CO_2 Emissions through Product-based Contributions

Approximately 29.1 million tons of CO_2

Green Gas Engine



M7V Series motors for HSTs

1. *HST: Hydrostatic transmission: A non-stage transmission comprising a hydraulic pump and hydraulic motors.*
2. *The details of Kawasaki-brand Green Products are disclosed on Kawasaki’s website:*
   http://global.kawasaki.com/en/corp/sustainability/green_products/index.html#2018item
   We launched the Kawasaki-brand Green Products in-house registration program in 2013 for products that meet standards established by the Company related to energy efficiency and other factors. The number of registered products has continued increasing every year, reaching 54 in 2019.*

Calculation Rules

- **Products to be assessed:** Kawasaki-brand Green Products, products that use waste, waste heat, and renewable energy, as well as cogeneration systems and rolling stock pertaining to modal shift, etc., were selected for assessment.

- **Period of assessment:** We have adopted a flow-based approach[3] in which the period of assessment is the estimated useful life of products sold in a fiscal year, because the estimated useful lives of our products are long. This allows us to better calculate the difference in CO_2 emissions between our products and industry standard class products over the entire period of use.

3. *Please refer to the “Guideline for Quantifying Greenhouse Gas Emission Reduction Contribution” (Ministry of Economy, Trade and Industry, March 2018).*

Realization of a Low-carbon Society: Business Activities

To reduce CO_2 emissions from business activities, Kawasaki has built energy-saving promotion structures for each business segment, and the entire Company is implementing a wide range of energy-saving initiatives.

In fiscal 2018, energy-saving initiatives reduced Kawasaki's (non-consolidated) annual CO_2 emissions by approximately 16,000 tons, bringing total CO_2 emissions from business activities to approximately 3,010,000 tons. Below are two examples of energy-saving improvements.

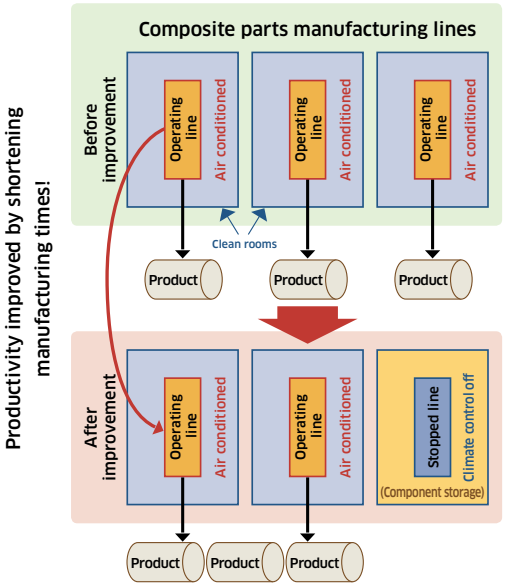
Fiscal 2018 Result (non-consolidated) CO_2 Emissions Reduction Effect through Energy-saving in Business Activities

Approximately 16,000 tons of CO_2

Saving Energy in Composite Parts Manufacturing Lines

Because of the strict quality requirements for composite materials used in aircraft fuselages and components, these materials are manufactured in clean rooms with controlled air temperature and humidity. Previously, the composite materials were manufactured on separate lines in multiple clean rooms. By increasing the speed of manufacturing on these lines and optimizing the processes, we reduced the manufacturing time required per component, thereby enabling production at the same pace as before with one fewer line. Stopping the unused molding and processing line and turning off the air conditioning for its cleanroom yielded a reduction in annual CO_2 emissions of approximately 2,900 tons.

Furthermore, the area in which the air conditioning was turned off is now being used to store components prior to assembly.

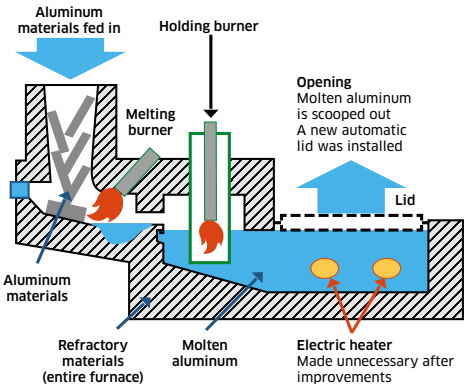


Electricity Consumption Reduced by Shortening Manufacturing Times

Energy Saving in Melting and Holding Furnaces

Melting and holding furnaces are a type of equipment used to melt down the aluminum materials for use in casting to produce motorcycle engine parts. Aluminum materials are fed into the furnace, where they are melted by melting burner, and a holding burner maintains the temperature of the molten aluminum until it is scooped out. The lid on the opening through which the molten aluminum is scooped out was previously opened and shut by hand. However, as it was not connected to the downstream scooping, it was simply left open whenever the furnace was in use, causing a great deal of heat dissipation and requiring the use of electric heaters to prevent the aluminum from cooling and solidifying.

Seizing the opportunity presented by the replacement of aging furnaces, we installed lids that are connected to the scooping apparatus to automatically open only when the aluminum is being scooped out, reducing heat dissipation. In addition, as a result of improvements to the efficiency of the holding burner and the heat insulation properties of the furnace's refractory materials, the electric heaters are no longer necessary, reducing the furnaces' electricity use by 95% and utility gas use by 35%, cutting annual CO_2 emissions by approximately 130 tons.



Simplified Cross-Section of a Melting and Holding Furnace

Review of Activities under the Ninth Environmental Management Activities Plan and the Activities of the 10th Environmental Management Activities Plan

Under the Ninth Environmental Management Activities Plan (fiscal 2016–2018), we implemented energy-saving initiatives aimed at reducing CO_2 emissions from business activities and cutting energy costs. While we achieved our target of reducing annual resource and energy costs by 5% or more in all three years, we met our goal of reducing CO_2 emissions per unit of net sales by 3% or more only in some years. Furthermore, we revised the rules for calculating the CO_2 reduction effect of products to improve calculation accuracy, realizing more correct information disclosure.

Under the 10th Environmental Management Activities Plan (fiscal 2019–2021), we will consider the potential impacts on our businesses of risks and opportunities as we work to further reduce CO_2 emissions by expanding the provision of products with low CO_2 emissions and promoting further energy-saving improvements and energy reuse in our business activities. By doing so, we will ambitiously work to achieve major reductions in CO_2 emissions.