

Environmentally Conscious Products

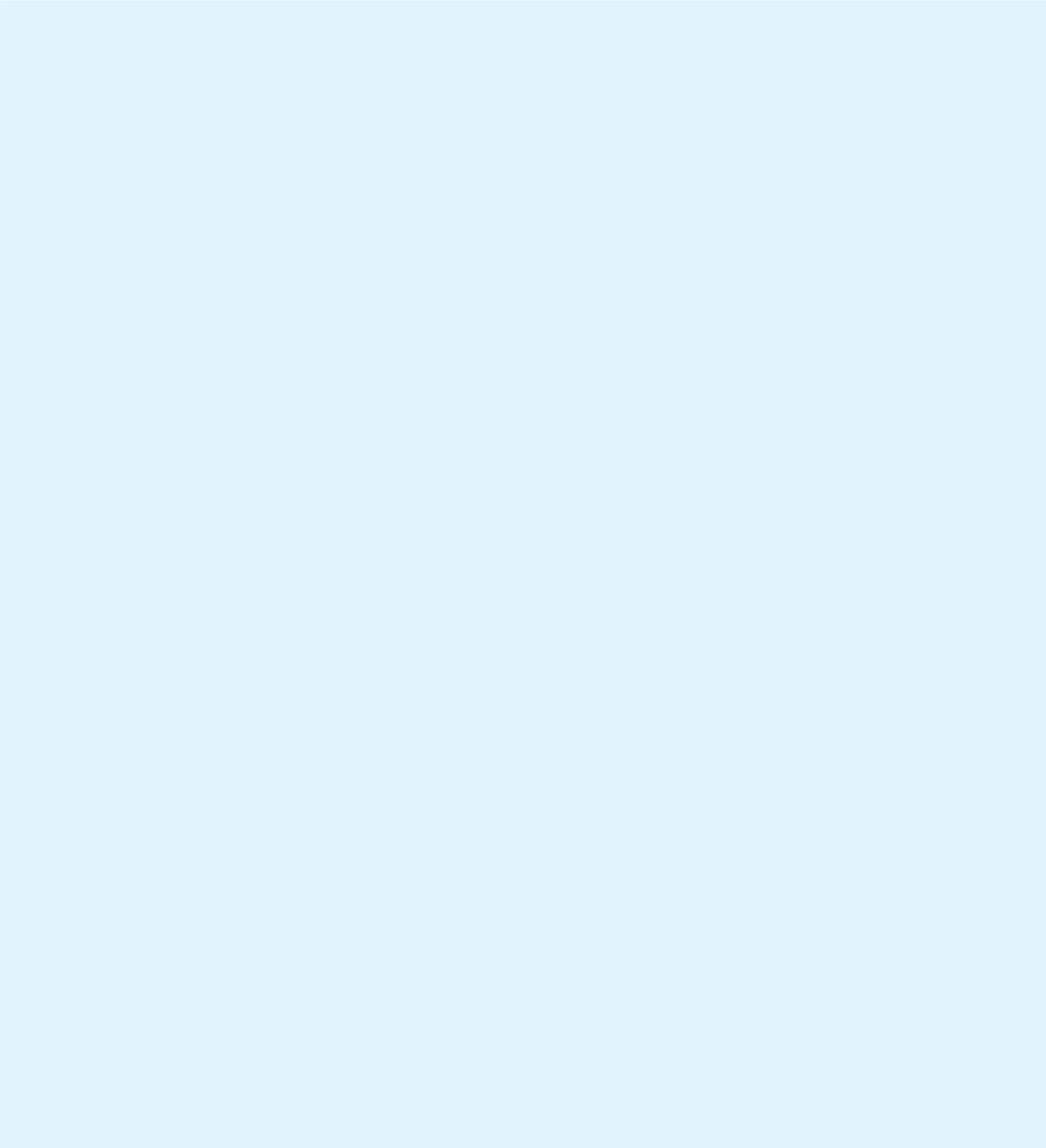
Kawasaki considers the reduction of the environmental impact in the course of its business activities as an important objective. In Europe and Japan enacted from 2006. Moreover, based on the improvement of reliability with quality control, we also engage in extending the length of warranties and reducing environmental impact by lengthen the lives of our products.

Year after year the exhaust gas restrictions for motorcycles become stricter, and we have found it difficult to respond to these using old methods. That is why we have

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The society of the future demands a shift from the present system of a society of mass production, mass



Kawasaki is working positively toward the reduction of the environmental impact throughout the life cycles of each product in all product fields as well as the previously introduced e

As far as environmental measures for our aircraft are concerned, issues, which demand our immediate attention, are energy conservation and cleaning exhaust gas, etc.

We jointly develop and manufacture passenger aircraft with Boeing in the USA and Brazil's Embraer and also develop and manufacture various types of helicopters, such as the BK117, which was jointly developed with Eurocopter in Europe.

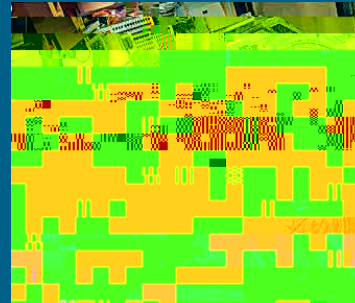
For the reduction of environmentally hazardous substances in



Boeing intends to use carbon fiber composite materials in many parts of aircraft and to reduce the amount of fuel consumption through reducing overall weights. We make the most of our fabricating technologies for carbon fiber composite materials and jointly develop and manufacture the front of the fuselage.

coatings, we encourage the adoption of high-solid coatings with low solvent and the development of high-solid coatings and coatings free from hexavalent chromium meeting our original specifications.

On the other hand, since our environmentally conscious technologies in aircraft engines have been highly regarded, we continue to expand our joint development and manufacture with aircraft engine manufacturers of Europe and the USA.



Kawasaki has also had a hand in the development and manufacture of the new environmentally conscious aircraft engine from U.K.'s Rolls-Royce plc. This engine is planned to be installed in the Boeing 787.

Transportation by ships is one of the best means of transportation in terms of environmental impact with small fuel consumption per unit load transported. We have an established record in the development and construction of a variety of marine vessels such as LNG carriers and LPG carriers, along with container ships, bulk carriers, crude oil tankers, and many others.

As one of our measures in reducing environmental impact, we are striving to reduce fuel consumption to begin with; therefore, we are working on technological developments to optimize hull shapes, improve the shapes of ship bows, and raise the efficiency of propellers. We have also developed a Rudder Bulb System with Fins (RBS-F) that effectively converts the rotational energy of the flow behind the propeller into propulsive force and have employed this in many ships.

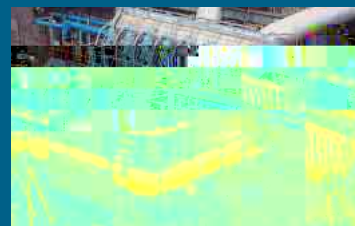


The fuel oil tank, as with the cargo oil tank, has a double-hull construction. It also is installed with the RBS-F as a measure to reduce energy consumption.

As a measure against marine pollution, in Very Large Crude Oil Carriers (VLCC) we employ a double-hull construction for the fuel oil tank similar to that of cargo oil tanks to prevent oil leaks in the event of accidents.

For installed engines, we have developed an electronically controlled marine diesel engine that is designed to reduce environmental impact in addition to innovatively improving operative functions.

Additionally, we have participated in the development of the Super Marine Gas Turbine which will be installed as the main engine in the next-generation coastal ships arising from the Super Eco-Ship project promoted by the Ministry of Land, Infrastructure, and Transport. This turbine has helped achieve reductions in fuel consumption by 30% and reduce pollutants such as NOx.



This engine reduces fuel consumption, curtails the amount of cylinder lubrication oil, and significantly reduces the amounts of NOx as well as soot and dust in exhaust gas.



This machine performs spot joining of light metals like aluminum. Using frictional heat, it softens the joining spots of components and joins together. Compared to the conventional method of resistance spot welding, it reduces the consumption of electric power by more than 1/20.

As part of our products for social infrastructure, we offer civil engineering/construction machinery and steel structures.

The shield tunneling machine, one product of civil engineering machinery, moves in the ground while excavating the required diameter tunnel, has high work efficiency and reduces environmental impact on the surrounding environment in comparison with conventional cut-and-cover tunneling method.

Furthermore, we have developed the DSR* construction method to increase performance in the reduction of environmental impact.

In construction machinery, we are engaged in the reduction of fuel consumption, cleaning exhaust gases, and reducing noise. Among these, with the adoption of the electronically controlled engine in the wheel loader, we have realized the reduction of NOx and particulate matter in exhaust gases along with the reduction of fuel consumption.

As far as steel structures go, we manufacture steel bridges, steel frames used in high-rise buildings, and LNG tanks; and in the field of steel bridge construction, we employ atmospheric corrosion resisting steel components for bridge girders to expand construction methods free from chemical substances by completely eliminating the use of coatings.

Environmental Protection Products and Technologies

Energy Facilities

In an age in which humankind can no longer avoid the issue of reducing CO₂ emissions, the promotion of the highly efficient use of energy, the utilization of waste energy and the use of renewable energy are just some of the measures society will have to take.

We have developed and supplied technology like the high-efficiency combined cycle power plant (CCPP) that combines gas turbines and steam turbines, of which the latter runs on the waste heat of the gas turbine and the gas turbine cogeneration system that effectively uses the waste heat of the gas turbine.

We also are giving high priority to developing technologies that efficiently use waste energy and market products such as a waste heat recovery boiler, a cement plant waste heat power generation system that uses the waste heat recovery boiler, and a top-pressure recovery plant for blast furnaces that recover the

a top-pressure recovery plant for blast furnaces that recover the internal pressure of blast furnaces and generate electricity.

In the area of renewable energies, we also provide wind turbine generation systems, photovoltaic systems, geothermal generation systems, and woody biomass power generation systems.

As for technologies that increase the efficiency of energy utilization, we supply ice storage cooling systems that efficiently use nighttime electricity and the optimization and diagnosis of industrial energy system that optimizes the efficiency of energy utilization throughout factories.

Our lineup of technologies that hold great potential in the future include the Gigacell (see pages 9 to 10 for further details) and liquid H₂ transport and storage technology that will accommodate the coming hydrogen society of the future.

Air Pollution Control

