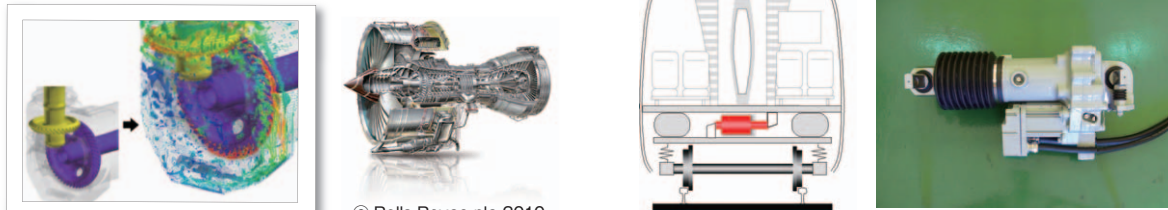


The businesses and products of each company of the KHI Group introduced in the preceding pages exist on steady efforts to achieve technology development, product quality, and product safety. The following pages will illustrate some of the basic, R&D activities that support the Kawasaki Group's businesses.

Crossover Technologies at the Leading Edge

The businesses and products of our Group extend across a wide spectrum of fields, including transport systems, energy and environment facilities, industrial equipment, and so on. To support this broad business field, the Corporate Technology Division, which is the corporation's research and development center, provides cross-cutting support for basic technologies at the leading edge, and works to pursue development efficiency and synergy effects.

Transport System Products



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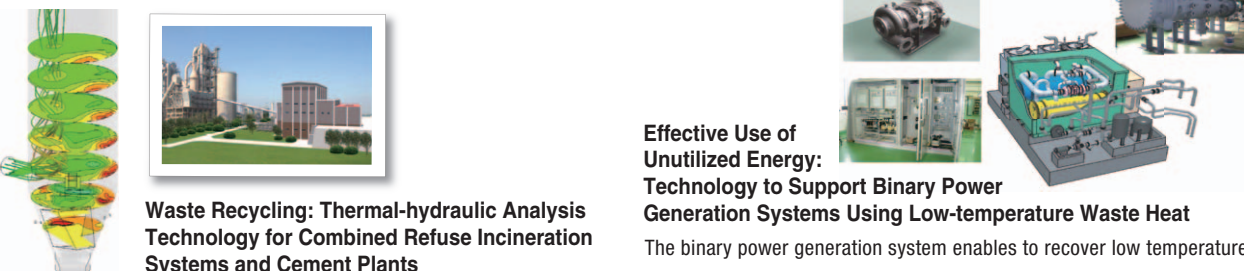
Contributing to Energy Saving in Aircraft Oil Simulation Technology for Engine Gearbox

In order to achieve energy savings, there is a strong demand for increased energy transfer efficiency on the gearboxes that transmit driving power from aircraft engines to power generators, pumps, and so on. This technology represents the first successful attempt in the world to predict the behavior of lubricant inside the gearbox, and it has received very positive evaluations, including the award for Best Paper of the Year by the Aircraft Engine Committee of the American Society of Mechanical Engineers.

Realizing a Comfortable Ride Quality Active Vibration Control Technology for High-speed Railway

The faster railway cars travel, the more vibration increases. This technology enables to improve the ride quality of high-speed railways. The electronic actuators installed between the car body and the bogies to control lateral vibration.

Energy and Refuse Incineration Products



Waste Recycling: Thermal-hydraulic Analysis Technology for Combined Refuse Incineration Systems and Cement Plants

This is the world's first combined system that provides gasification fuel from the refuse to cement plants, thus enabling recycling of the refuse. The thermal-hydraulic analysis technology is used in optimizing the position for feeding fuel gas to cement plant pyrolysis furnaces and other such applications.

Effective Use of Unutilized Energy: Technology to Support Binary Power Generation Systems Using Low-temperature Waste Heat

The binary power generation system enables to recover low temperature thermal energy from 80°C to 120°C that is difficult to utilize with usual technologies. Developed with the aim of making a low-cost, maintenance-free system, the high-performance heat exchanger, integrated turbine generator, power converter, and so on employ the most up-to-date technologies.

Industrial Equipment Products

Energy Saving in Sewage Treatment Facilities: Aeration Blower Using High-speed Electric Motor with Magnetic Bearings

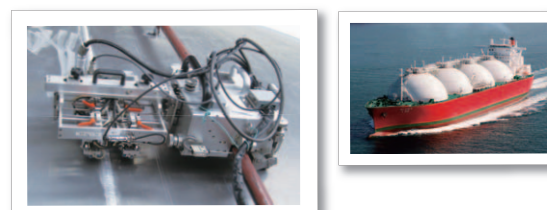
Blowers are used for aeration of the bioreactors that separates contaminants from wastewater. Approximately 40% of all the electricity in sewage treatment plant is used by the blowers. Unique basic technologies relating to power electronics, electromagnetic field analysis, electro-machinery design, control system design, and so on are contributing to reduction of the power consumption by aeration blowers.

Assisting with Advances in Regenerative Medicine: Advanced Basic Technologies for Automatic Cell Processing Systems

This device implements automatic processing of various kinds of cells for use in the fields of regenerative medicine expected as a leading-edge medical technology and drug discovery. It was realized through the use of clean robot technology, image processing technology, production management technology, and so on. This system was the first in the world to succeed in automatic processing of human iPS cells, which has been difficult except when handled by experienced technicians.

Measures to Improve Product Quality

- We are taking various measures for quality improvement tailored to the characteristics of mass-produced items and individually ordered products.
- We implement preventive quality assurance and front-loaded development at the product development stage in order to reach higher product quality.
- We hold technical training, seminars, and other such activities to educate employees about quality problems and to share information. At the same time, we are working to prevent the recurrence of faults by registering quality assurance problems on a database.



Case Example of Quality Improvement Measure Automation of the Non-destructive Testing of Welds on Spherical LNG Tanks Loaded on Ships

Spherical LNG tanks for loading on ships are manufactured by assembling multiple members, and this technology enables automated inspection of the welds' soundness using ultrasonic. Inspection used to be manual, and required enormous amounts of time and labor, but this technology now enables inspections to be carried out rapidly and with stability.

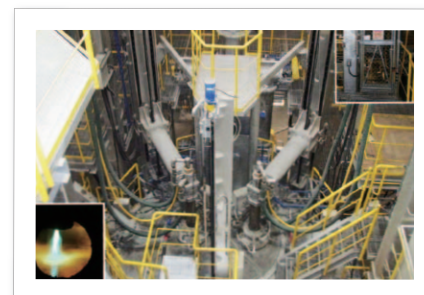


Education and Information Sharing on Quality Problems by Technical Training and Seminars

Training is based on quality problems experienced in the past, as well as case examples of faults. At the same time, all business divisions explicitly report on the causes, countermeasures, and other aspects of those faults. The purpose is to prevent recurrence of similar problems by sharing these information.

Measures to Manage Product Safety

- The Group Management Principles, which were formulated as the Kawasaki mission statement, contain this statement of our corporate safety policy: "...the Kawasaki Group is committed to providing high-performance products and services with safety and superior quality secured."
- In order to make the process of realizing product safety compliant with ISO12100, an international standard for safety of machinery, we are having the business divisions reassess their internal regulations regarding product safety. As a result of this process, the implementation of risk assessments in the design divisions and the implementation of risk reduction measures appropriate to the magnitude of the risks discerned are going to be incorporated into the design process.



Risk Assessment Implementation Example: Ash Fusion Furnace

The plasma torch that serves as the heat source for the ash fusion furnace attached to a waste incineration plant has electric power applied to it in the form of direct current at high amperage and voltage (maximum of 2400 A at 1000 V). The outer tube of the torch builds up an electric charge of approximately 400 V. Such facilities require careful safety measures against electrocution. A risk assessment was therefore carried out, and measures were taken accordingly, including establishment of a special zone in the vicinity of the torch and the installation of a door interlocked with equipment shutdown.



Risk Assessment Implementation Example: Wheel Loader

We are conducting a risk assessment at the design stage of wheel loader development that covers the driver, workers in the vicinity, service personnel, and third parties when the product is being transported, driven, operated, inspected, and maintained. We are devising protective measures appropriate to the risk level category to be taken in accordance with the risk reduction process of ISO12100.