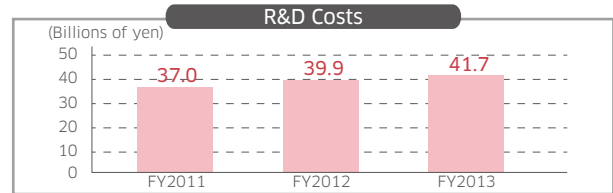


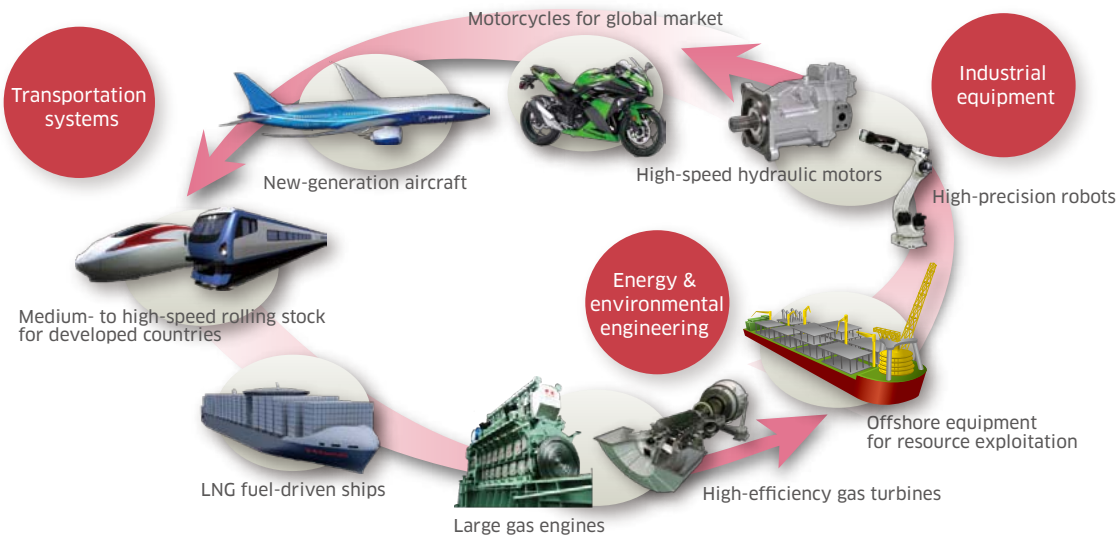
Research and Development

In its approach to R&D activities, the KHI Group keeps in mind a continual picture of the lifestyles and the society of the future. In addition to our existing markets in developed countries, it is essential to respond to diverse customer needs in emerging nations that are experiencing rapid economic growth and in resource-rich nations. To do this, we promote new product and business development and engage in development activities aimed, for example, at reinforcing product competitiveness and boosting quality and productivity. As part of this policy, particularly in the case of important and challenging development projects, the Corporate Technology Division (our corporate R&D division) works in close coordination with business divisions to create a shared business strategy covering market needs and product development goals as a way to deliver well-timed and innovative products.

With its diverse products and wide range of technologies, the KHI Group seeks to “create new and powerful strength through synergistic effects.” To promote this, the development and production teams of our business divisions and the Corporate Technology Division serve as the interlocking threads of a network that is knit together into a flexible but resilient collaborative system, working to create stable foundations for our business operations and to expand our business domains.



■ Creating New Products and New Businesses with the Combined Strengths of Kawasaki



■ Promoting Vision-Oriented R&D with an Eye to the Future

Keeping a careful watch on the continuing rapid growth in the emerging markets of Asia and other regions and on global issues in areas such as energy and the environment, the Corporate Technology Division devotes its greatest energies to supporting new product development and product improvement. In parallel, however, we continue to take on the challenge of developing bold new businesses that target future markets.

By tapping into dynamic trends in the wider world to create our vision of the future and acknowledging the tasks that need to be carried out, we are energetically pushing forward with R&D to create the new products, businesses and solutions that will be needed in the society of the future, as well as the core components and innovative production technology that are indispensable to them.

The development projects we are currently working on include energy solutions that deliver, at the lowest cost and with outstanding environmental performance, the electric power and fuel required by customers not only in Japan but also in emerging nations and elsewhere; and

superconducting motors with compact bodies that generate enormous power. In addition, to build a hydrogen-utilizing society in which energy is supplied by hydrogen-based fuel and our streets are busy with fuel cell vehicles, we are engaged in developing technologies based on the concept of the CO₂-free hydrogen chain, which combines the benefits of stable energy supply with CO₂ reduction. These technology development projects, in areas from the production and transport of hydrogen to its storage and utilization, are being tackled enthusiastically through teamwork involving relevant business divisions, Head Office divisions, and the Corporate Technology Division in an approach that emphasizes commercial viability and includes tie-ups with experienced external partners.

Minoru Makimura

Senior Vice President,
General Manager,
Corporate Technology Division



Topic Automated iPS Cell Culture System



Automatic operation of cell culturing



Appearance of the system

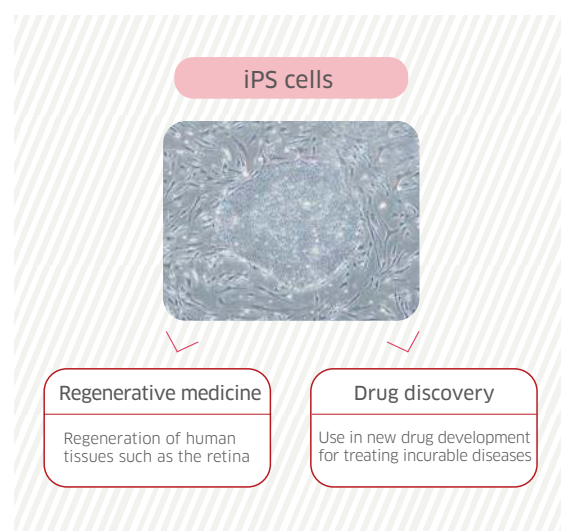
Since the KHI Group commercialized Japan's first industrial robot in 1969, we have applied robot technology in many different areas and strived to advance its technology.

One example is the automated cell culture system, developed with an eye to medical treatment in the future, which utilizes the advanced control, mechanical and cleaning technology that we acquired in developing robot technology for semiconductor manufacturing equipment.

Cell culture operations are largely performed by experienced technicians who skillfully handle equipment and chemical solutions. We have automated this delicate procedure using our robot technology. In 2008, the Plant & Infrastructure Company began selling our automated cell culture system as an "expert that never gets tired" and that stably performs mass cell culturing, and it has already been used in the field of drug discovery. Induced pluripotent stem (iPS) cells are versatile cells that can grow into any cell type. They are expected to be used in developing drugs for diseases that have no effective cure, such as Parkinson's disease, and in regenerative medicine. To realize practical use of iPS cells, stable culturing of high-quality iPS cells is needed. In June 2010, using our automated cell culture system, we succeeded in automatic culturing of iPS cells for the first time in the world.

Currently, we are collaborating with the Center for iPS Cell Research and Application, led by Professor Shinya Yamanaka of Kyoto University, as a member of a research association working on a project* to accelerate the industrial application of stem cells. We are researching and developing technology for the mass culturing of high-quality cells. Meanwhile, as the first step to develop our business in the world market, we have begun research aimed at clinical use overseas through an international project*.

We are working now on marketing (market creation) alongside the R&D outlined above and seeking to contribute to the future of medicine.



* Projects supported by New Energy and Industrial Technology Development Organization (NEDO)