

Research and Development



Research and development activities were almost entirely funded by the Company during fiscal 2016. Combined spending on research and development for the Steel and Energy Products Business and the Industrial Machinery Products Business amounted to ¥4,237 million (US\$37 million).

Seeking to become a “Top Global & Niche Corporate Group”, we strive to develop new products and production techniques using our proprietary technologies. To bring these products and techniques to market as soon as possible, we actively promote multidisciplinary and technological tie-ups and joint development.

Our Research and Development Headquarters collaborates with business divisions and Group companies to 1) improve the capabilities, performance, and reliability of core products; 2) develop offerings in new business fields based on core and differentiated technologies; and 3) promote the development and commercialization of new products through synergies with Group companies.

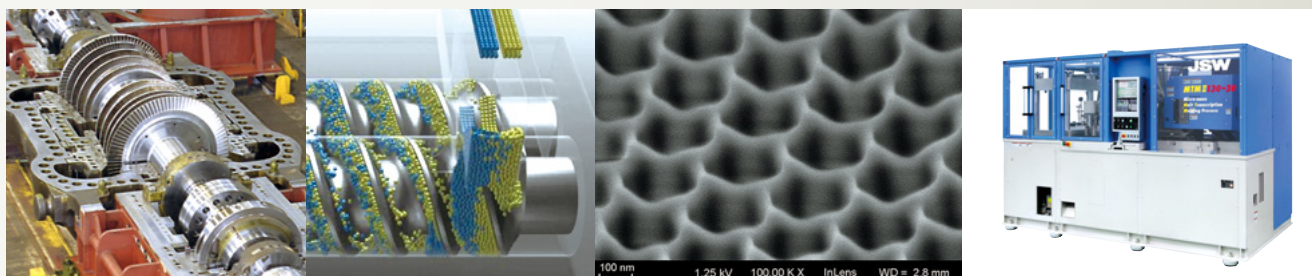
The Research and Development Headquarters consist of the head office, and our research laboratories in Muroran, Hiroshima, and Yokohama.

Basic Research and Development Policy

We develop new products and businesses by focusing on new energy and energy savings, information and telecommunications, nanotechnology and materials, and new production technologies, which relate directly to existing businesses. We have increased collaboration between the Research and Development Headquarters and business divisions, and aim to cultivate existing business by expanding and upgrading core technologies.

We engage in basic research for future technologies and contemporary social needs and in researching component technologies for existing products. We will build on these efforts to undertake R&D projects that create new products and businesses and pursue innovations for existing products.

In Steel Products, we emphasize advances in energy and creating even more industry-leading offerings while commercializing new areas. The focuses in Machinery Products are to enhance plastics machinery, IT equipment, and other industrial machinery. We will allocate significant resources to such machinery by clarifying that our commercialization framework is open to mergers, acquisitions and alliances.



Activities by Business Segment

Steel and Energy Products Business

Product development centers on materials, notably for clad steel pipes for natural gas transportation, large steel castings, and forgings and high alloys for high-efficiency thermal power generation, forged steel products for advanced nuclear power plants, and high-performance nonferrous alloys, as well as manufacturing process technology development. We improve materials and component technologies for existing products. In the renewable arena, we develop material and component technologies to create lighter and more reliable pressure accumulators for hydrogen fueling stations. We create analytical technologies and enhance component technologies to improve the reliability of wind power plants.

Segment R&D spending totaled ¥1,274 million (US\$11 million) in fiscal 2016.

Industrial Machinery Products Business

In machine-related product development, we are working to develop advanced processing technology for plastic molding machines; enhance the performance of plastic extruders and film molding equipment; enhance the performance and lower the cost of magnesium injection molding equipment and compressors; and develop manufacturing equipment for fiber-reinforced plastic composite components. We are also incorporating advanced technologies and systems to develop laser annealing equipment for thin-film transistor liquid crystal display (TFT LCD) production, as well as other laser application equipment and chemical vapor deposition (CVD) and plasma application equipment.

R&D spending in this segment was ¥2,963 million (US\$26 million) in fiscal 2016.