

Research and Development

Research and development activities were almost entirely funded by the Company during fiscal 2019. Combined spending on research and development for the Industrial Machinery Products Business, the Steel and Energy Products Business, and the Other Business amounted to ¥4,708 million (US\$43 million). Aiming to become a company that contributes to the prosperity of society by generating changes through our innovative technologies, 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.

Business divisions and Group companies collaborate to 1) improve the capabilities, performance, and reliability of core products; 2) develop and nurture 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.

Basic Research and Development Policy

(1) In terms of the promotion and commercialization of new businesses, the New Business Promotion Headquarters collaborates with each business division and prioritizes R&D on new energy and energy savings, information and telecommunications, nanotechnology and materials, aircraft components, and new production technologies, all of which are related directly to JSW's businesses. Through these efforts, we aim to focus on expanding and upgrading core technologies while cultivating and growing existing businesses.

(2) 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.

(3) 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. In Steel Products, we aim for improving profitability of existing products while commercializing new areas.



Murooran Research Laboratory



Hiroshima Plant
Technical Development Department

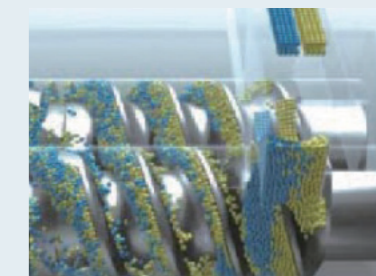


Yokohama Plant
Technical Development Department

Activities by Business Segment

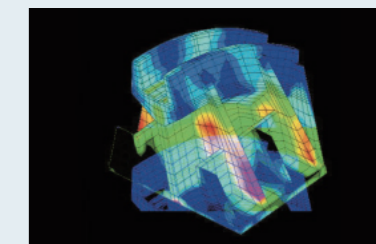
Industrial Machinery Products Business

In machine-related product development, we are working to develop advanced processing technology for plastic molding machines; enhance the performance of plastic extruders; improve the functionality and performance of film and sheet 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 and other products. R&D spending in this segment was ¥2,101 million (US\$19 million) in fiscal 2019.



Steel and Energy Products Business

Product development centers on developing materials and manufacturing process technologies, notably for clad steel pipes for natural gas transportation pipelines as well as large steel castings and high alloys. Our technological development focuses on improving materials and element technologies for existing products. Segment R&D spending totaled ¥674 million (US\$6 million) in fiscal 2019.



Other Business

In addition to commercializing and expanding businesses for aircraft components, various functional materials for the optical communication field such as high-performance crystalline materials, and pressure accumulators for hydrogen fueling stations, we also promote development and commercialization of various functional materials including high-performance metal materials and nanomaterials. Segment R&D spending totaled ¥1,932 million (US\$18 million) in fiscal 2019.

