

R&D and Intellectual Properties

Management Resources Underpinning Competitive Edge—Capabilities of Our Technologies



The EBARA Group has been an R&D-oriented company since its establishment in 1912. We completely revamped our R&D system in the fiscal year ended March 31, 2010. Since then, we have been heightening product competitiveness through an approach of aligning research and development and intellectual property operations more closely with business activities in accordance with the BRDIP*1 strategy. We have also begun engaging ABA*2 activities aimed at effectively utilizing external resources.

*1. An original EBARA Group acronym created from "business," "R&D," and "intellectual property"
 *2. An original EBARA Group acronym created from "academy," "business," and "associations"

Basic Approach

The BRDIP strategy reemphasizes that research and development and intellectual property operations are for businesses. By dovetailing research and development and intellectual property activities with business operations, this strategy aims to accomplish two major goals: maximizing development investment efficiency and heightening product competitiveness. Moreover, the strategy incorporates our plans to trigger new advances by integrating the Fluid Machinery & Systems, Environmental Plants, and Precision Machinery businesses.

In regard to research and development, each business segment is responsible for product development, while corporate divisions are responsible for research on core and fundamental technologies. We are strengthening basic research through Ebara Open Innovation (EOI)*3 and heightening product competitiveness through Ebara Open Laboratory (EOL)*4. Also, with a view to creating new businesses, we are moving ahead with activities based on Ebara Innovation for "X" (EIX)*5

Furthermore, Ebara Open for Supplier (EOS)*6 activities are aimed at enhancing prototyping efforts.

For more than a century, we have exploited intellectual properties. Globalization has led us to shift from protecting intellectual properties to incorporating them into aggressive expansion strategies. Specifically, we are focusing on the needs of Group companies worldwide as we advance intellectual property initiatives. Furthermore, rather than patent numbers, we are focusing more on patent quality with a view to securing patents that will underpin competitive advantages while also engaging in technology branding activities.

*3. An original open innovation format that entails fostering young researchers at outside research institutions and conducting joint research to resolve advanced technological issues
 *4. A corporate research organization that enables exchanges among researchers and open sharing of research themes in-house
 *5. A new research and development system for business creation
 *6. A term referring to both a framework and activities for open exploration of R&D suppliers that is not limited to existing suppliers

Competitive Advantages

In research and development, EOI is responsible for some of our basic research, which it conducts with 50 research departments at 30 universities. EOL conducts research on around 80 research themes, including those conducted by EOI, and focuses on enhancing technological capabilities to further bolster product competitiveness.

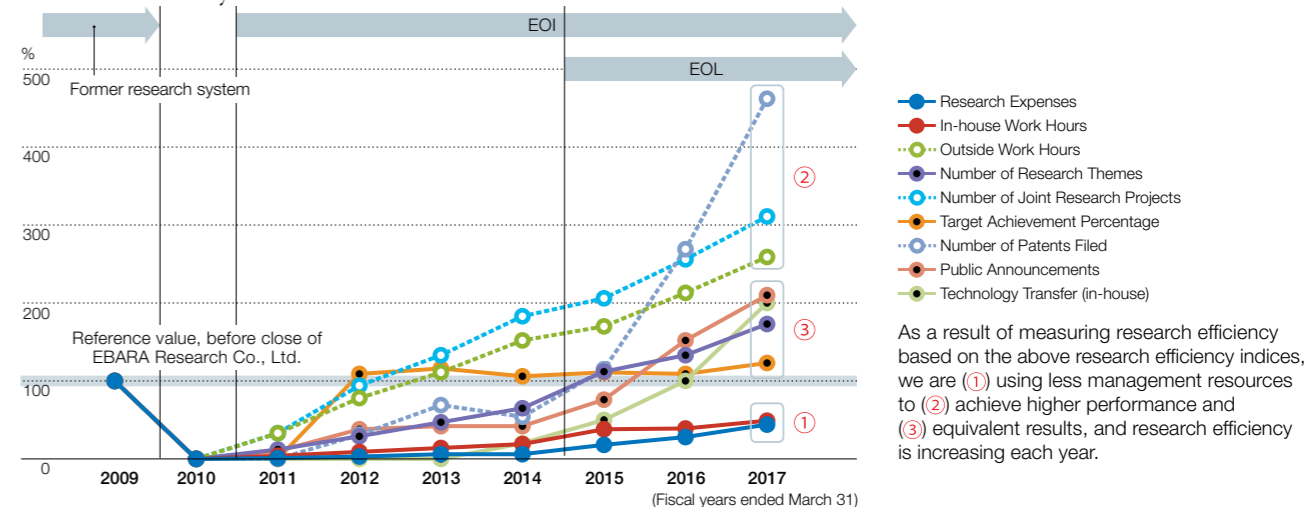
As shown in the graph, by entrenching the activities of EOI and EOL into our R&D ventures and managing them based on the defined key performance indicators (KPIs), we can contribute to the maximization of development investment efficiency and the heightening of product competitiveness. Numerical evaluations show that the quality, volume, and contribution to business activities of our current research ventures has surpassed that of research in the fiscal year ended March 31, 2009, when we were still operating under the previous R&D system. Research efficiency is also up.

Going forward, we will prioritize research themes that are directly linked to our business as we boost product competitiveness based on the defined KPIs.

Regarding intellectual properties, as a result of introducing the Precision Machinery Company's corporate culture to the Fluid Machinery & Systems Company, its patent filings in Japan have exceeded 200 for two consecutive years and have more than tripled since three years ago. As our intellectual properties strategy, we continue to focus on patent quality rather than numbers with a view to developing intellectual properties that will underpin competitive advantages. Our KPIs are the numbers of patent, utility model, and design applications filed and of applications filed based on the pre-litigation strategy*7.

*7. Strategy of acquiring patents to prepare for potential future litigations

Research Efficiency Indices



As a result of measuring research efficiency based on the above research efficiency indices, we are (1) using less management resources to (2) achieve higher performance and (3) equivalent results, and research efficiency is increasing each year.

Priority Strategies and Progress

	Strategy	Progress
R&D R&D activities that are fully integrated with intellectual property activities aimed at supporting competitiveness and growth strategies	Promote and support EIX and formulate themes for next fiscal year	Began applying research results to business and formulated themes based on activities prior to EIX
	Advance research on EOL themes, transfer results to businesses, and establish business models and systems	Selected priority themes, accomplished targets, managed and evaluated progress using KPIs, applied for patents related to business model, and provided back-office support
	Establish such fundamental technologies for numerical analysis and analytical techniques, strengthen business foundations, and promote research and development	Formulated and implemented plans for developing numerical analysis and analytical infrastructure, helped perform work outsourced by business segments, and cooperated in R&D activities
	Establish a system for information security and confidential information management and manage risks	Revised review methods for public announcements, began sharing review results, and established a system for managing technological information
Intellectual Property Promoting strategic intellectual property activities that fully utilize the Group's intellectual properties	Acquire intellectual property rights strategically and on a global basis	Progressively shifted focus from patent numbers to patent quality and ultimately patents that will underpin competitive advantages through pre-litigation strategy
	Establish a system for the management of risks accompanying global intellectual property rights	Constructed system for managing intellectual properties of overseas Group companies and tracked intellectual property activities
	Enhance and solicit the value of the EBARA brand	Optimized procedures for acquisition and maintenance of trademarks for the Company's logo and advanced technology branding activities

Initiatives for Strengthening Research Foundations: New Method for Utilizing External Resources via EOS

The EBARA Group has begun constructing a unique supplier network to be utilized in improving R&D efficiency.

Requirements of R&D activities include the ability to swiftly create and test prototypes and testing equipment, the capability to utilize quality, new materials in components, and other procurement needs. For this reason, the EBARA Group has begun conducting what it calls "EOS activities," which are activities meant to uncover highly accommodating collaboration partners without being limited to existing, business-related partners. Through these activities, we coordinate with external institutions to find partner companies that the EBARA Group can exercise technological synergies with, organize technology exchange forums, visit such companies, and take part in other initiatives. In addition, we have created frameworks that allow

for quick progress from planning meetings to production and finally payment in order to make it easier for partner companies to fill orders from EBARA. We also consult with companies on an individual basis, and there have been some cases in which interactions between engineers have led to orders being placed and articles being produced.

EOS activities create a scheme that is similar to utilizing virtual factories, not requiring the acquisition of assets. These activities also make development consulting possible, contributing to increased development efficiency. Furthermore, as one facet of our efforts to bolster collaboration with partner companies, we provide these companies with free access to certain patents held by the Company and conduct intellectual property matching activities to help partners more effectively utilize these patents.