Create New Products and Technologies

Hitoshi Sugino Senior General Manager Technical Division

Continually Taking on New Challenges as We Reinforce Fundamental Technologies to Generate Innovation

FY2024 is the final fiscal year of the three-year medium-term business plan. Our fundamental technologies are "formula design technology," "mixing and kneading technology," and "film manufacturing and processing technology." In this three-year medium-term business plan, we believe that getting back to basics and thoroughly embodying "the spirit of manufacturing" is important, so we have defined a Technical Division Policy of "reinforcing fundamental technologies to generate innovation." We focused on the rapid development of products that delight customers and the shift to a development approach leveraging DX, and we reviewed our organizational structure to respond to these initiatives.



In the areas half a step or one step ahead of our existing businesses, there are still many themes with hidden potential for unlocking the future. We will take a step further from there toward new fields for the future.

R&D Structure

As per the measures of the three-year medium-term business plan, we have sought to enrich our R&D efforts from a hardware perspective through efforts such as improving the environment of our R&D Center. As part of these efforts, we commenced full-fledged R&D operations at Buildings 1, 2, and 3 of the R&D Center (Tokyo) to further deepen our compound and film technologies. We installed film prototyping equipment in Building 3 and have a structure that would enable us to make films and sheets from the materials we developed as compounds and to perform sample work.

In FY2023, we completed a semi-commercial plant in Building 2 for new thermoplastic vulcanizate (TPV) elastomer which includes kneading machines for developing TPV compounds that can serve as vulcanized rubber substitutes. We are using this semi-commercial plant to further refine our production technologies and carry out research aimed at deploying mass-production equipment in the future.

Intellectual Property Strategies and Open Innovation

It is vital to formulate management strategies from multifaceted perspectives to respond to the recent changes in society, such as the promotion of sustainability and environmental, social, and governance (ESG) efforts. Here, intellectual property (IP) landscaping making use of IP information is effective, and the Intellectual Property Department is taking the lead to provide recommendations on our management issues.

The creation of IP through open innovation is also an important development strategy of RIKEN TECHNOS, and we are submitting patent applications according to our

research results. We go about our activities, setting the number of patent applications and collaborations with external parties as our KPIs. We will use the knowledge gained through new discoveries and innovation from collaboration with external parties to enhance our ability to develop new products and technologies. Besides the development themes being undertaken currently, going forward, we will also focus on themes for the development of film products.

Development of Environmentally Friendly Products

We will expand the lineup and sales of RIKEBIO[®] series, which uses biomass materials. At the same time, major issues going forward will be to develop materials that contribute toward saving energy and to increase the use of thermoplastic elastomer (TPE)-which reduces CO, emissions during production compared to vulcanized rubber-as a substitute for vulcanized rubber.

We worked on R&D of TPV-a vulcanized rubber substitute-with the recognition that it will be core to our elastomer business. Through formula optimization using materials informatics (MI), we established the basic design and made it possible to carry out small-volume production and sample work at the semi-commercial plant. Besides compounds themselves, we also plan to launch products that use them as materials, such as TPV sheets.

We do not see environmental issues as simply being constraints, but also as opportunities for taking on challenges that can be turned to our advantage. However, no matter how environmentally friendly a material might be, it cannot reduce environmental load if it is not used. We carry out development with a focus on making products useful and reasonably priced for customers so that our products are chosen by even more people.

Digital Transformation of Research and Development

To achieve the delivery of optimal solutions to our customers and to maintain sustainable growth of the Company, it will become increasingly important to also establish digital environments in the R&D field. Besides using MI and developing MI human resources, we also seek to achieve greater formula design efficiency and speed by performing data-driven R&D.



Comments from Researcher

Ryoga Nakagawa Material Group, Core Technology R&D Department

At the Material Group, we delve deep into the fundamental technologies of "formula design technology" and "mixing and kneading technology" to create new technologies and products. My role in our work is mainly the development of TPV, a vulcanized rubber substitute. Formula design and kneading technology are both important for TPV, and while there are areas that are difficult, I also feel a sense of job satisfaction. In FY2023, we completed the semi-commercial plant and put in place a structure that expands the scope of our kneading technology. In addition, efficient formula optimization becomes possible through the use of MI, and we also succeeded in the development of new TPV within a short period of time. Going forward, I will continue to work on creating new value while flexibly changing development approaches.

We are also putting in place systems and environments for comprehensive digital management of accumulated technical information-such as test operations, equipment, and results – and effective referencing and use of such data. We will optimize the R&D flow and transform from tasks by individuals to a process that creates value as an organization.

- ✓ Concentrate R&D functions
 - ✓ Accelerate development
 - ✓ Achieve more advanced design based on enhanced research facilities
 - ✓ Enhance global R&D facilities
- Adopt state-of-the-art prototype machines
- Develop global/DX human resources
- Utilize materials informatics (MI)
- Work on carbon neutrality and circular economy initiatives

R&D Investment

Over the period of the medium-term business plan: 6.2 billion yen

Rapid development of products that delight customers Shift to a development approach leveraging DX

