Interview with Officer in Charge of Development

We will work on development of products that contribute to solving social issues based on our core technologies and strengthen technology development with focus on short-term profitability.

Executive Officer and Manager of Development Department, Technology Division
Katsuhiro Kawamura

Q | What is the basic policy of technology development?

Before the decarbonization issue became a hot topic, we were content with our relatively high technological capability and market shares compared to peers in the industry. However, now that we are sought to solve the decarbonization issue, we are required to transition to hydrogen, ammonia, and other such fuels and develop new technologies. There are also concerns over the changing competitive environment given entries from other sectors. For this reason, we set forth the basic policy of firmly grasping the needs and issues of customers and enabling development and commercial application of products that contributes to our customers. For example, we are working on the development of combustion burners that use hydrogen and ammonia as fuel in the AP-related business, but industrial burner manufacturers from other sectors and Chinese companies may come into the market. While it is an opportunity for us to increase our market share and enter into other sectors such as ceramic industry, we would like to further strengthen development of products that contribute to society with a sense of urgency.
My mission as the General Manager of Development Division is to find the seeds of technologies and products for achieving numerical targets of the next medium-term plan and the 2030 long-term vision and nurturing them. Nikko has the four core technologies of mixing and kneading, heating, control, and material handling, and I am paying attention to measurement technology as a new core technology in addition to them. Examining the viscosity and condition of asphalt mixture and ready-mixed concrete is mostly dependent on human senses. If we develop our own sensors and establish technologies to measure and analyze various data in the manufacturing processes, we can stabilize product quality and improve operation efficiency and further reduce operations that depend on personal knowledge or experience. We aim to develop new products that are not limited to existing business fields and contribute to revenues by combining these four + one core technologies.

Q | What are the technologies that differentiate Nikko from others?

We have developed burning, heating, and drying technologies over many years in the AP-related business. Especially, in combustion burners, we have extensive track record in large burners with 500 kw or higher capacity. Our strengths are anti-pollution measures against NOx, SOx, etc. and high fuel efficiency. This technology can also be used for the under-development hydrogen and ammonia burners, with the low pollution combustion technology being the differentiating factor for us. Our mixing and kneading technology is superior in efficiently mixing ingredients that have high viscosity and weight. This is a proprietary technology that we developed from the mixing and kneading of ready-mixed concrete. As demand for recycling waste rises, we are expecting demand for mixing and kneading technology to process various materials to also increase. As for control technology, our strength is in remote control operation in the civil engineering field leveraging AI and communication. For example, we have sufficient human resources for developing efficient digital technologies required for AI-assisted judgment of gravels as well as remote operation and unmanned operation of various plants. There is no specific differentiating factor regarding our material handling technologies, but we have a large competitive edge in offering efficient and safe material handling and high-quality, low-cost products. Finally, in measurement technology, we aim to quantify viscosity, temperature, and load resistance of primarily civil engineering materials and visualize product quality, which is difficult in the manufacturing process. We are enhancing our proprietary sensor technology and, at the same

A hot-blast, direct-fired jet heater using hydrogen fuel

time, promoting development in cooperation with companies outside the Group.

Q What are the achievements in FY 2023 and initiatives for FY 2024?

In FY 2023, we succeeded in commercializing a hydrogen-fueled burner. We also commercialized a combustion burner using biomass fuel, and we already have a customer of the burner. Further, we developed a jet heater for heating in cold regions in addition to its application as a burner for asphalt plants. In product testing, we carried out a demonstration experiment in an environment below -20°C in Hokkaido during severe winter and successfully confirmed that it can be used in such an environment without any problems. The product can be used for a wide range of purposes in cold regions such as concrete curing and other civil engineering applications and heating tents at events.

To be sure, continuous support from the government is necessary in terms of development of hydrogen supply infrastructure, hydrogen price, etc. for full-scale introduction of the product.

We developed a new asphalt foamed equipment necessary for manufacturing medium-temperature mixture of asphalt that is easy to maintain and has lower NOx emissions. In the crusher-related business, we developed our own mobile soil improver (Mobix-Eco).

For FY 2024 initiatives, we will strengthen product development of an ammonia-fueled combustion burner. We have already completed development of products for hydrogen and biomass fuels, and we plan to establish the supply system for products that run on various fuels. In the BP-related business, we have been working on quality improvement for a new mixer model for high-strength concrete, and we aim to introduce it as a product in FY 2024. Nikko Group has been focusing also on utilization of AI technology for the past three years and has already developed and introduced proprietary products GraSanMan, an AI function to identify aggregates, and AI'll be sorter, an AI-based image identification device. There have been an increasing number of inquiries for these products, and we plan to further enhance the product lineup in the future.

Q What are the initiatives in the next medium-term plan and for realization of the long-term vision?

We are currently working on more than 40 development themes, and all of them are linked to technology development for realization of the long-term vision. Among these themes, we aim to introduce products based on about 60% of the themes within the next two years, with a plan to commercialize the remaining 40% of the themes in the next three to five years. At the Development Department, which I am in charge of, about 70% of the overall development themes are related to environment, especially decarbonization. Nevertheless, the Nikko Group as a whole is also focusing on fields including automation, labor saving, safety measures, and remote control in response to the labor shortage in the construction industry, which is our customer. In terms of revenues, the foamed equipment developed by the AP-related business contributed significantly to improvement in business results while contributing to decarbonization. Currently, we are also developing a medium-temperature mixture manufacturing technology for recycled materials, and once complete, the product is expected to be widely installed in mixture plants. Foamed equipment is contributing to our business performance significantly as you can see, and Mobix and the group of AI-related products developed by us are also expected to have high profitability in the future. The environmentally friendly products such as hydrogen- and ammonia-fueled burners are expected to make full-scale contributions to revenues from 2030. We will apply the technologies we gain in the development process and also work on creating products that lead to revenues in the short term. We established a new Development Section 4 with 15 employees for this purpose.

Q What are the issues faced by the technology development?

First of all, we have shortage of information technology engineers. We are actively hiring outstanding human resources in Japan and abroad in accordance with the long-term vision and road map for technology and product development. We are also short of mid-level project leaders. We are strengthening development and appointment of human resources who can autonomously drive forward product development based on the themes with a sense of urgency. In terms of technology, we are simultaneously promoting short-term product development and long-term core technology development. Particularly, we are considering development of a mechanism for strengthening the core technologies from a long-term perspective and development of human resources who support the mechanism.