We aim to realize 2030 Vision by leveraging technologies contributing to environmentally friendly technologies for decarbonized society from our customers' perspective

Nikko Group places environmentally friendly products as a pillar of the differentiation strategy for achievement of 2030 Vision. Managers in charge of the AP- and BP-related businesses and technology development got together and discussed topics such as changes in customer needs on sites, Nikko's core technologies and their superiority, and future business expansion and contributions to business performance.

Session. 1 Capital investment in pursuit of decarbonization to gradually increase

Q What initiatives are the customers in the AP- and BP-related businesses taking for realization of a decarbonized society?

Miyake : I feel our customers are increasingly conscious of decarbonization initiatives, but in recent years profits at road pavement companies have been squeezed by surging asphalt prices, and the companies have been holding back on capital investment. It is difficult to raise the price of asphalt mixture products given the high dependence on public works, which is also contributing to the sluggish business performance. Some customers, who are major road pavement companies, have strong appetite for capital investment and they are introducing warm mix (foamed) equipment (it reduces CO_2 emissions by lowering the temperature for heating asphalt) that can be retrofitted to existing plants. The industry as a whole, however, places strong importance on profits. So, even though they do make some investments for decarbonization, they keep postponing investments in existing facilities. In addition to the decline in crude oil price, passing on the cost increases to selling price of asphalt mixture is required for any recovery in capital investment. Road pavement companies in general have a plan to halve their CO_2 by 2030 and make it net zero in 2050. At present, we are not yet in a situation where a company has to be environmentally friendly to win an order, but going forward, it is likely that environment-related initiatives will increase the disparity between customer companies.

Okamoto : In the concrete industry, weak alkaline calcium carbonate is manufactured by reacting strong alkaline calcium extracted from concrete waste materials and collected slightly acidic CO_2. There is a move to capture CO_2 in concrete by mixing and kneading the manufactured calcium carbonate in concrete. In this case, CO_2 will not be released into the air even when the concrete is broken up. There is tremendous room for capturing CO_2 using this method because concrete is the most widely distributed construction material in the society. The concrete industry as a whole also faces the issue of leftover concrete. Leftover concrete is disposed as industrial waste. Utilizing extracted calcium contributes to decarbonization while reducing disposal costs. Nevertheless, CO_2 emissions of ready-mixed concrete companies, who are customers of the BP-related business, is negligible when CO_2 emissions from the raw materials and transportation of ready-mixed concrete are excluded. More than 80% of CO_2 emitted in the manufacturing process of concrete, which mixes sand, water, admixture, etc. into cement comes from cement. For this reason, technology is being developed (with 20.84 billion yen in government funding) for capturing the CO_2 emitted in cement manufacturing process as well as for utilizing the captured CO_2 as carbonate in a GI Fund project of the New Energy and Industrial Technology Development Organization (NEDO) towards realization of carbon neutrality at cement manufacturers. The ready-mixed concrete and concrete secondary product industries are also driving forward development of materials for capturing CO_2, technology to capture calcium carbonate, and quality control system (government funding of 35.94 billion yen). Nikko Group has been enhancing its initiatives by participating in the GI Fund projects in the concrete field.

Kawamura : In June 2022, Tokyo Metropolitan Government for the first time approved use of low-carbon (warm mix) asphalt mixture for decarbonization of public works of the Tokyo Metropolitan Government. Tokyo aims to halve GHG emissions in the prefecture by 2030 compared with the level in 2020. If warm-mix asphalt mixture, which reduces the manufacturing temperature by 30°C, is used for works of the municipality, it is calculated to reduce CO_2 emissions by about 3,470 tons a year. This move has been spreading throughout the country and is resulting in expansion of the market for warm mix (foamed) equipment for asphalt. In addition to warm mix (foamed) equipment, some companies are switching burner fuel from heavy oil to city gas and propane but such movement has been sluggish given the stagnant business performances of road pavement companies. In the future, investment for decarbonization will gather pace if carbon credit (trading of the rights for reduced GHG emissions) becomes popular and the momentum for introduction of carbon tax increases. It is also necessary to lobby the involved industry organizations and participate in working groups. Formulation of a certain level of industry standards would promote environment-related investments.

Executive Officer and Manager of Development Department, Technology Division

Katsuhiro Kawamura

Directly joined Nikko in 1994 and currently serving as the Manager of Development Department, Technology Division. I have been long engaged in formulation of plans for asphalt plants in the AP-related business. I try to develop products and technologies from the customers' perspective by leveraging my experience of interacting with numerous customers.

Session. 2 We supply products from the customers' perspective by leveraging proprietary technologies

Q What are the strengths that Nikko Group relies on when supplying products for solving problems? What are the Group's value creating activities?

Kawamura: We have high market shares in AP and BP, and we are the only AP manufacturer who can supply a plant and control panel together. This is also highly rated by the customers. When introducing a new technology at a plant, Nikko Group's differentiating factors include the ability to offer our proprietary technology and propose optimal solutions for the entire plant. For example, the warm mix (foamed) equipment has features only Nikko can offer such as interlinking the plant with peripheral devices and controlling their operations. In the BP-related business also, we are planning to introduce and sell an overseas technology called CarbonCure to inject CO_2 into a concrete mixer and capture CO_2 in concrete. We are aiming to offer values that cannot be matched by other companies as we assemble the plant ourselves and understand the flow in the entire plant. Commercial application of ammonia and hydrogen burners in the AP-related business is long way off but we are pushing ahead with product development in an approach of offering what customers want so as to build an entry barrier and capture the first-mover advantage.

Miyake: The customers of the AP-related business are making necessary capital investment primarily for burner fuel transition and warm mix (foamed) equipment by carefully selecting investment targets. Our customers, both regional businesses and major companies, are increasingly shifting from heavy

Manager, AP Sales Management Department, Business Division

Toshimasa Miyake

I also joined Nikko in 1994. Initially I was engaged in sales in the AP-related business in Tokyo, and then got involved in establishment of the Environmental Business Department and Business Development Department. Subsequently, I gained experience in sales of industrial machinery, and in April 2022 I was appointed as manager of the AP Sales Management Department. My motto is carrying out sales activities that take into consideration mutual advantages of Nikko and its customers.

oil to city gas and propane, which are more environmentally friendly. In fact, a customer in an area where city gas is not available, adopted a propane burner with the aim of reducing CO_2 emissions by half by 2030. I believe that such moves would result in sustained replacement demand towards 2030 or 2050. Nikko Group is not considering entering into the fuel supply field but the Thai agent is currently considering a local biomass fuel supply business for asphalt burners. Nikko Group is considering making contributions by leveraging its core technologies, and there is also the possibility of the fuel supply business resulting in lock-in of plant projects.

Okamoto: The equipment offered by the BP-related business can play an active part in decarbonization by capturing CO_2 in aggregates of ready-mixed concrete, in water, or during the kneading process. For more than 10 years, Nikko Group, together with Nippon Concrete Industries Co., Ltd., has been producing calcium carbonate by having CO_2 react with highly alkaline sludge water generated in the concrete manufacturing process. Initially, the business was started to reduce waste treatment costs arising from disposing leftover concrete at construction sites, but we are currently promoting its decarbonization aspect.

Session. 3 We aim for business expansion with focus on profitability as well as environmental contribution

Q What kind of contributions and profitability do you expect from environmentally friendly products?

Miyake: This time, I had a fresh look at the net sales target of the environmentally friendly products (see p. 61). The target figure we were disclosing till last year was an estimate reflecting our expectations towards formulation of the medium-term plan two to three years ago. So, I once again calculated it based on actual business negotiations. In the AP-related business, we are anticipating investment projects through around 2026 based on business negotiations and capital investment plans of major road pavement companies. Investment projects may be postponed if the profit environment continues to worsen, but we feel that such projects have started moving forward from around July this year reflecting growing momentum for the bottoming of financial results of road pavement companies. Profitability of environmentally friendly products is relatively high compared with the existing businesses. We aim to expand the market share and improve profitability by promoting deployment of differentiated proprietary products while making optimum proposals from the perspective of the customers.

Kawamura: We can calculate the optimum selling prices for hydrogen and ammonia burners, which are long-term development projects, but we are not calculating their profitability. On the other hand, we are carrying out development taking into account customers' return on investment (ROI) in short-term development projects. Nikko Group has been working on product development in an approach based on customers' needs. I think we had a certain arrogance that customers have no choice but to purchase from Nikko Group because of our high market share. In an era that seeks new and different values, there may also be potential risks from newly entering companies. Going forward, we plan to pursue reforms aimed at organizational management focused on profitability by closely working with sales staff in addition to developing products and technologies based on the approach of offering what customers want.

Manager, Sales Section 3, Industrial Machinery Sales Management Department, Business Division, and Low Carbon Task Force, CEO's Office

Takeshi Okamoto

I also joined Nikko in 1994 and has been engaged in sales in the BP-related business. I was engaged in BP sales mainly in China for about six and a half years from year 2000, and I am the only one with overseas experience among the three today. I was assigned to the current department in 2020 and am marketing BP-related products to general contractors and precast concrete manufactures.

Okamoto: Calcium carbonate manufacturing equipment, which we are supplying to Nippon Concrete Industries, is an environmentally friendly product that is expected to contribute to the performance of the BP-related business. In the sales forecast of environmentally friendly products, we count it as part of carbon dioxide capture and utilization (CCU). Currently, Nippon Concrete Industries has a road map to introduce it at each plant of its group and we see investment projects through 2026 or 2027. We began recording sales in FY 2023 and they will double in FY 2025, and we are expecting the sales to further increase from 2027 onwards. For contributions to business performance after that, we are considering expansion of the customer base and new business deployment in collaboration with the AP-related business.

Session. 4 We will solve social issues including decarbonization in Japan and abroad

Q What are the technology and product strategies as well as regional strategies for the future?

Okamoto: The strategy of the BP-related business is to continue promoting the business with Nippon Concrete Industries. At the same time, we are considering business collaboration between customers who are located near to each other and have introduced Nikko Group BP- and AP-related products. In particular, ready-mixed concrete companies, who are the customers of the BP-related business, have calcium but they do not emit CO_2. Meanwhile, customers in the AP-related business emit CO_2 because they have burners, but do not have calcium. The two sides can collaborate to manufacture calcium carbonate by reacting calcium with CO_2. We want to contribute to environmentally friendly urban development by realizing such synergy effects going beyond the boundary of businesses, and this is something only Nikko Group can achieve. When capturing CO_2 in aggregates, it is necessary to break up concrete to increase the surface area. We are expecting demand increase for crushers and mobile plants (mobile crushers) offered by Nikko Group in the CO_2 capture process, although they are not directly an environmentally friendly product.

Kawamura: The target, for now, of the environmentally friendly products is the Japanese market. We will drive forward product development in accordance with the technology and product road map and steadily pursue development with focus on profitability as well as improvement in social value through environmental contribution. At the same time, we would like to actively expand sales overseas, especially ASEAN countries and Thailand, if the momentum for introducing environmentally friendly products is high, but right now the interest is weak. First, we would like to install a model plant locally and start promoting it. However, there is high level of interest in warm mix (foamed) equipment and we have been receiving inquiries from customers in Taiwan. We also have a track record of shipping it to Shanghai, China.

Miyake: We will implement sales strategy for environmentally friendly products at an optimum timing ahead of other companies by determining the trends in customer needs, various regulations, and stable procurement of hydrogen and ammonia fuels. In addition, we consider plant operation service (remote operation of plants) to address the lack of successors and labor shortage at customers as one of business strategies for profitability improvement. We have embarked on education of employees engaged in sales to strengthen proposal-based sales skills including ability to explain the value of not only the product but also the value created by the product to the customer and convince them, with the aim of instilling the measures and improving implementation capability.