



KYB Technical Strategy

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1 Introduction

Companies are constantly required to create new products and new technologies through technological innovation in order to maintain their competitiveness and achieve sustainable growth. This is also the mission of KYB, which is based on manufacturing.

In this issue No.70 of Technical Review, as a milestone and in celebration of the 90th anniversary of the company's founding, I would like to look back at the company's progress and innovation in the ten years since the 80th anniversary and outline a strategy for the next ten years.

2 Technological Advances and Innovations in Ten Years Since the 80th Anniversary

2.1 Technological Advances

The dramatic improvement in the transmission speed of 5G network communications has accelerated the development of IoT and automated driving technology..

In addition, artificial intelligence (AI) and machine learning, in particular, have also advanced rapidly to help various industries realize automation and efficiency improvements. Generative AI is now opening up new possibilities.

2.2 Shift to Environmentally Conscious Energy

Energy conservation efforts have shifted to sustainable, renewable energy sources such as wind and solar power generation, primarily in Western countries. In other words, they have become carbon neutral in one fell swoop.

In the automotive industry, battery electric vehicles (BEVs) are rapidly gaining popularity, with manufacturers such as Tesla and BYD having a major impact on the market. This trend is currently experiencing uncertainty, but the direction of the technology innovation will continue.

2.3 Changes in Society

The COVID-19 pandemic has changed the way

we work and live. Digital technology has advanced rapidly with the proliferation of remote work, and communication tools such as Teams® have improved work efficiency and enabled flexible work arrangements. Advances in the virtual world have made it easier for people to communicate and collaborate remotely. In addition, the need for vaccine development has advanced biotechnology, including gene-editing technology. In the Asian region, cashless payments are becoming more popular and QR code payments are now very common. Related technologies are also spreading rapidly.

The changes in the external environment described above have naturally had an impact on the internal environment.

Of course, the proliferation of remote working has improved the efficiency of our meetings. The product and technology development function has gradually optimized CAE analysis and product design based on 3D models. The BEV-related technology function has promoted the development of eAxle ^{Note 1)}, suspension, and steering systems. Improvements in communication speed have led to advanced remote control of construction machinery, requiring the development of hydraulic equipment that can be controlled by electronics.

On the manufacturing floor, it is now common to identify items with QR codes, and production lines have been automated with AGVs and robots.

Note 1) An integrated unit consisting of a drive motor, inverter, and transaxle (reducer).

3 Strategies for the Next Ten Years

KYB's issues for the next ten years are to maintain and expand existing businesses and to create new value by addressing new businesses. To achieve this, we need to have multi-faceted technical strategies as follows:

3.1 Product and Production System Process Innovation

In response to the demand for faster technological development as the years go by, we will improve the efficiency of the production system from development to manufacturing. By building a digital twin environment as the axis, we

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will promote process innovation based on 3D models. 3D data will be used in all processes, such as prototyping in virtual space, production simulation, automatic generation of molds and machining programs, and concentrated management of inspection programs and measurement data, thereby shortening development time.

3.2 Technology and Product Development Based on Technology Roadmaps

The critical challenges for KYB in product development are to improve the electrification and automation of mobility, which are advancing along with improvements in AI/communication technology and battery technology. Activities are underway to integrate these challenges into company-wide roadmaps. Currently, it is expected to commercialize the CASE-compatible products under development, as well as to launch Smart Road Monitoring and the oil condition monitoring system, which are potential new business models. Meanwhile, we will need to shift to the development of products and systems supported by sophisticated software. In the future, it will be difficult to carry out technology development using only accumulated knowledge and insights as in the past. We will even have to venture into the possibility of replacing hydraulic power with electric motor power in our technology/product development. In addition, it will be essential to respond to increasingly stringent environmental regulations, especially those being promoted in Europe.

3.3 Human Resources Development and External Appeal

In order to expand our technological domain as described above, we would like to discuss the expansion of the Open Innovation Program,

including joint studies with research institutions such as universities and technology exchanges with other companies in a wide range. In particular, for power control and vibration control, which are KYB's core technologies, the Basic Technology R&D Center will resume technology exchanges with major universities in Europe and the U.S., which have been suspended since the COVID-19 pandemic, so that we can follow the global situation of the hydraulic industry even more closely. KYB will also promote its presence not only to Japanese organizations, but also to overseas research institutes. We may need to consider a mechanism to use not only the Development Center, but also the Basic Technology R&D Center and the Production Technology R&D Center as places for information exchange.

We have activities to establish strategies from a long-term perspective by backcasting and creating future timelines for young engineers, who will play a key role in the future of KYB. In a collaborative activity (DLab) with the Future Invention Center of the Institute of Science Tokyo (formerly Tokyo Institute of Technology), our young employees who are possible candidates for future management presented what they envisioned for a future society. I am convinced that their paradigm shift can generate further technological innovation.

4 In Closing

I am reminded that the basis of KYB's technical strategy is to improve itself, to develop products and services demanded by customers and society, and to provide engineers with work that gives them pleasure and a sense of fulfillment.