

21 Core Technologies Supporting KOBELCO's Materiality and Value Creation

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In the 120 years since the founding of the KOBELCO Group in 1905, the company has developed various technologies that meet the needs of society and customers in numerous sectors. In 2014, the Technical Development Group organized these developments into 21 core technologies that have been continuously refined to solve various challenges experienced by individual customers and entire sectors. The KOBELCO Group has three major business segments: materials, machinery, and electric power. The 21 core technologies are derived from the activities of these three segments and encompass manufacturing technologies with shared elements. The scope of application includes not only product development and manufacturing within the KOBELCO Group, but also the resolution of challenges experienced by customers of secondary processing manufacturers. As such, the concept of the 21 core technologies has been widely disseminated in customer-facing materials and has also become a communication tool both within and outside the company (Fig. 1).

The world is changing in a rapid and

unpredictable manner. The KOBELCO Group's current corporate philosophy is designed to support adaptation to change to a degree commensurate with needs. Established in 2020, the philosophy is to envision a world in which people, now and in the future, can fulfill their hopes and dreams while enjoying safe, secure, and prosperous lives. Further objectives of the philosophy include defining the KOBELCO Group's mission and role in society to achieve sustainable growth. In May 2021, the KOBELCO Group defined five materialities as key challenges for the group to address in order to create a sustainable society, secure profitability and sustainable growth by solving societal challenges and supporting value creation, and enhance corporate value over the medium to long term. The five materialities comprise three areas related to value creation and two areas related to management infrastructure (Fig. 2).

This special issue focuses in particular on the three areas related to value creation: contributing to a green society, "ensuring safety and security in community development and

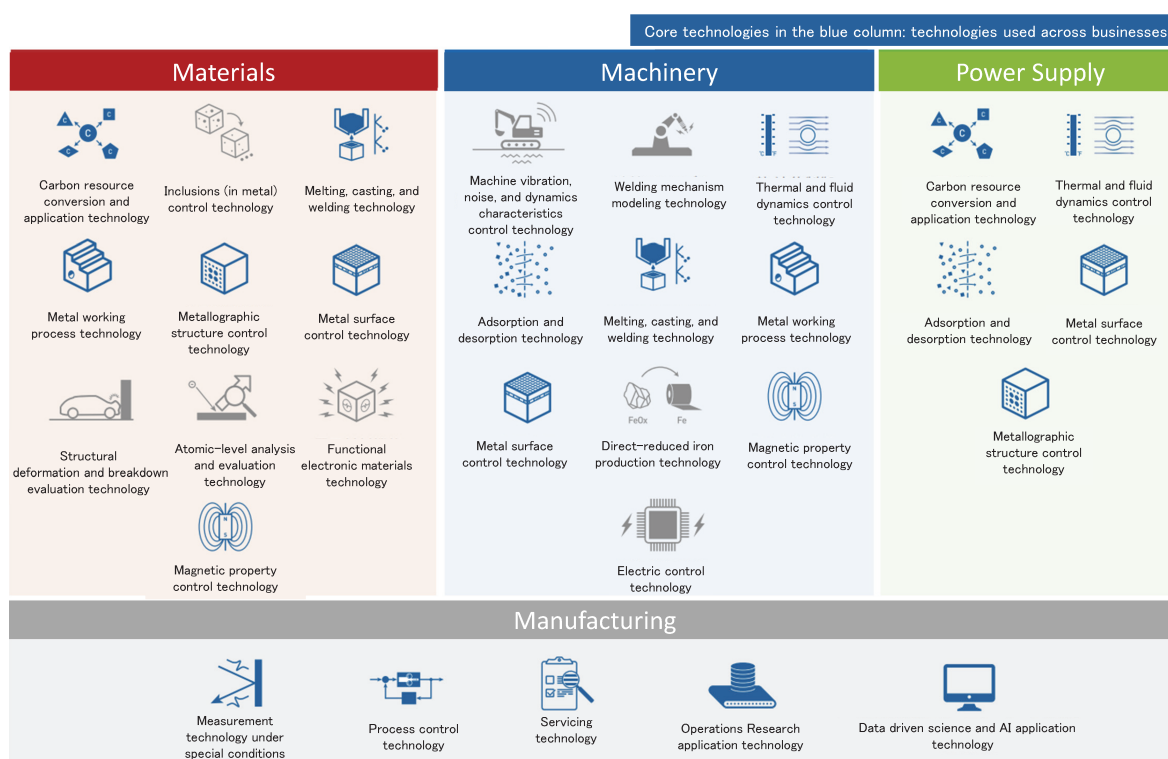


Fig. 1 21 Core technologies



Fig. 2 Materiality of the KOBELCO group

manufacturing”, and “Providing solutions for the future connecting people and technology”. Our intention with this report is to help customers and the general public understand the KOBELCO Group, particularly in terms of how our 21 core technologies are used and what possibilities they open up in the three areas related to value creation.

The KOBELCO Group’s history is dotted by a series of businesses that quickly led to the prototypes of its current businesses soon after their launch. Rather than diversifying as the company matured, the company successively developed businesses in segments including iron, steel, and cast and forged steel; nonferrous metals such as copper, aluminum, and titanium; and industrial machinery, all of which were indispensable to society’s development at the respective time. Each sector was important for Japan during its period of development. Furthermore, there was a strong aspiration to shift to domestic production. The company began searching overseas for technologies that would be practical for society but were not available in Japan. This practice continues to this day, with many of the KOBELCO Group’s technologies, products, and services in the materials, machinery, and electric power fields still supporting infrastructure necessary for societal function. Additionally, our customers are now located throughout the world.

Most of the materials and machinery for these sectors support societal infrastructure and the foundations of industry. As such, they are not generally at the forefront as end products. However, customers who purchase the industrial products in these sectors demand exceptional technological capabilities and highly reliable product

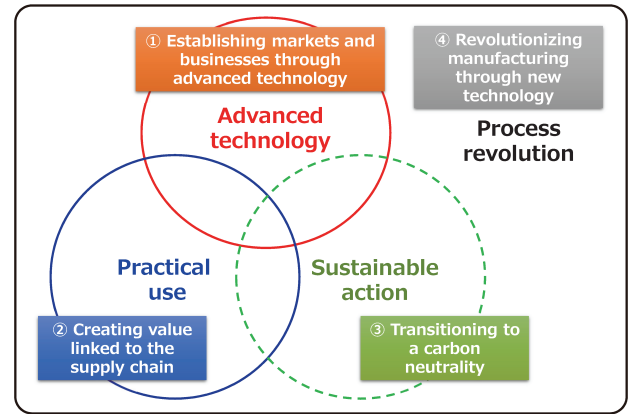


Fig. 3 Four values that lead to solving social issues

functionality. Furthermore, the functions of these products manifest inside customers’ products, factories, or spheres of activity. This characteristic necessitates solutions for secondary processing, the use of materials, machinery maintenance, and various challenges that sometimes arise between the KOBELCO Group’s products and customers’ production facilities. We have observed that the KOBELCO Group’s core technologies have been tried and tested by society through practical application in practical-world conditions.

The practical world with which the KOBELCO Group has long interfaced has undergone major changes in recent years, and these changes are occurring at an increasing rate. The world of advanced technology is one such area of change. This world has benefited from groundbreaking advances in science and technology over the past few decades, and the breadth and depth of what can be accomplished with technology have expanded greatly. The world of sustainability is another area of great change. The value system of this world focuses on society’s sustainability in the natural world, displacing the economic drive that is valued in our and our customers’ practical world. And finally, the world of process innovation is one that values the radical evolution of manufacturing with new technologies in areas such as digital applications and AI. This is also referred to by such terms as the Fourth Industrial Revolution. The revolution of the manufacturing process is precipitating the evolution of manufacturing methods and is beginning to have a profound effect on business models (Fig. 3).

What is certain, however, is that even amidst major changes among what is valued, such as advanced technology, sustainability, and process innovation, these values must eventually intersect with the practical world’s values, namely, economic viability and quality that can be trusted. It is furthermore certain that it will be difficult to

propagate new values throughout society until they are well established. Various experimental endeavors will be conducted on a continually larger and wider scale in the course of pursuing that intersection of values. Still, there is no escaping the principles of the practical world in which society and our customers live. What will be required of our technical team is the wisdom and technology to bring closer to the practical world desirable advanced technologies for society, the world of sustainability including resource recycling and carbon neutrality, and process innovation. Necessary as well is to mold the practical world to accept these changes. We place ourselves in the midst of the challenges facing our customers and society and regard this endeavor as requiring the synthesis of our 21 core technologies and the joint development of an extensive spectrum of technologies from all

over the world.

This special issue delineates the 21 core technologies of the KOBELCO Group, which will be cultivated and ultimately tested within the four value systems that will resolve societal challenges: the world of process innovation, the world of advanced technology, the world of sustainability, and in particular, the world of practical use. This report also summarizes how each of the 21 core technologies is connected to the three materialities of the KOBELCO Group's sphere of value creation, including the current status and future prospects of this connection. We welcome the opinions of our customers and others and hope that this special issue will promote discussion with our stakeholders regarding solutions to the future's major societal challenges, which no individual company will be able to tackle on its own.