FOREWORD

Takuo Imai

Executive Vice President and Director

Kawasaki Steel's No. 1 continuous caster was introduced in 1968, the year after Mizushima Works began operations. We moved quickly to introduce additional units, and by the first half of the 1970s, we had installed a total of seven CCMs at Chiba and Mizushima. During these years, we worked hard to expand the range of CC products, improve the reliability of the equipment, and increase casting efficiency. By the time we installed No. 3 CCM at Chiba in 1981, we had basically achieved a continuous casting ratio of 100%. Trends in the rapid expansion of continuous casting technology during that period were summarized in a special issue of Kawasaki Steel Technical Report published in 1980.

The 16 years since then have seen the end of quantitative expansion in the Japanese steel industry and the start of an era oriented toward process rationalization, including higher quality steels and energy saving. Now, as everyone knows, the steel industry must strengthen its fundamentals if it is to survive the megacompetition of the 21st century. Amid these trends, continuous casting technology has played a great role, and in the future its importance will remain unchanged. As one example of Kawasaki Steel's longstanding commitment to this outstanding technology, although the vertical-bending caster has now become the standard in the world steel industry for casting high quality steel, the first unit of this type was actually constructed in 1974 at Chiba Works as No. 2 CCM. Many other examples of the contribution which our engineers have made to the steel industry also come to mind: These include work to improve the reliability of the continuous caster, the development of electromagnetic flow control techniques for molten steel, which we undertook in the early 1980s, and the development of the continuous forging technology as a measure against centerline segregation. We have also contributed to energy saving techniques, in spite of the restrictions of the steelworks layout, by our efforts to synchronize and improve the efficiency of continuous casting and hot rolling by introducing unmanned transport vehicles for hot slabs, the sizing press, and other technologies, and in the mid-1980s, we completed a direct hot charged rolling system.

With the startup of new continuous casters which embody this series of technical developments at Mizushima in January 1993 and Chiba in July 1994, we began planning a new special issue on continuous casting. Because the new CCM at Chiba was constructed as part of the major modernization that was carried out at that site in the early 1990s, the total concept of that project will be presented in a special issue on modernization of Chiba Works scheduled for publication in 1997. The present special issue will introduce the concept of the construction of Kawasaki Steel's new continuous casters, which were our first in almost twelve years, and will also discuss the various new technologies adopted in the construction. This issue presents articles on the equipment technology, control technology, and refractory technology developed and accumulated over the course of a decade and a half, as well as special techniques for electromagnetism utilization, which we hope will contribute to the further progress of the world steel industry. Although we know that some of our readers may be attracted, at first glance, by the glamor of new technologies such as the thin slab contin-

uous caster and strip casters which are being developed as industrial technologies in many parts of the world, mainly by the mini-mills, we are confident that the new continuous casting technologies and related techniques presented here will ensure that our two steelworks can compete successfully in terms of both cost and quality well into the 21st century, and we trust that you will find this issue interesting and useful from this point of view.