FOREWORD

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Stainless steel is one type of steel product which has continued to grow up the present and is also expected to enjoy expanded demand in the future. As a principal reason for this, it can be said that stainless steel, which was once regarded as strictly a high grade product, has now become a familiar, everyday material thanks to technical innovation and mass production. If per capita consumption of stainless steel is considered as a barometer of the degree of economic maturity, much growth can still be forecast in the various nations of Asia and Africa, and in China. Moreover, in spite of the fact that demand has been stagnant lately in these growth regions as a result of the recent currency instability and economic slowdown, worldwide consumption is generally expected to grow from 15 million tons in 1996 to 19 million tons in the year 2000 in response to demand in the fields of durable materials and construction, various types of infrastructure construction, and others. For this reason, mills around the world are currently expanding their production capacity, and new makers are attempting to enter the field.

Kawasaki Steel has a history of 45 years as a stainless steel producer. We first began production by the electric furnace method at Nishinomiya Works, but we now operate in two-base production system in Japan, one at Chiba in the east, the other at Nishinomiya in the west. Chiba Works produces stainless steel by an integrated process which includes all the steps from converter refining through cold rolling finishing, while production at Nishinomiya is centered on thin cold rolled products. During this period, Kawasaki Steel has developed a number of "world's first" technologies, realized innovations in equipment, and expanded its capacity, particularly in ferritic stainless steel. Specific examples include the development of ultra low carbon super ferritic steel using the vacuum oxygen decarburization (VOD) process, cold rolling with the tandem mill, and others. The new steelmaking shop and new hot strip mill at Chiba Works have been described in detail in respective special issues. This special issue on stainless steel presents an outline of the technologies, equipment, and materials developed up to the present, together with recent technologies using new equipment, inclusion control technology using the VOD, rolling control technology for stainless steel using the world's most advanced hot strip mill, and surface measurement technology for cold rolled stainless steel, as well as new products with improved properties produced using these technologies and equipment. Other topics presented in this special issue include the most recent knowledge on high temperature fatigue and high temperature oxidation in the field of material properties, estimation method of atmospheric corrosion and examples of construction using exterior building materials, which have come to be used in large quantity in recent years, and the results of an analysis of ridging property, which has historically been a subject of much research, using advanced analytic devices.

Stainless steel is a material with a variety of excellent properties, which include corrosion resistance, heat resistance, and high strength, among others. Moreover, it is also an excellent material from the environmental viewpoint, because it offers outstanding maintainability and recyclability

which meet the need for energy saving. We at Kawasaki Steel will continue to produce materials which help to maintain the harmony between the growth of human civilization and the global environment with a forward-looking attitude, oriented toward the future possibilities of the 21st century.

It is our hope that this edition of Kawasaki Steel Technical Report, which is the first special issue on stainless steel since 1993, will prove useful to all our readers.