FOREWORD

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Technical innovation in science and technology has a major impact on continuing industrial and economic growth. This is particularly true in the field of electronics, which plays the critical role of a key technology supporting the entire industrial structure. As the Japanese steel industry strives to meet the increasingly diverse, ever more strict requirements of customers for product performance, cost competitiveness, and quality, it has actively developed and introduced leading edge technologies in an effort to achieve new levels of rationalization.

By making positive use of advanced computer, sensor, and other technologies, Kawasaki Steel has realized a high level of optimization and automation in the entire process spanning all the steps from order receiving through production and shipping. As a part of our program of corporate diversification, we have also stressed the commercialization of the many systems which we have developed and use in our own operations, along with related development and operating techniques, as assets for the electronics business.

In this special issue, we have tried to encompass both the technical aspects of products developed, commercialized, and marketed in areas of the electronics industry where Kawasaki is active, and examples of Kawasaki's instrumentation technology, which has proven its effectiveness in practical application in our steelworks.

The Universe series of super microcomputers which Kawasaki markets in Japan has demonstrated its unique capabilities in on-line transaction processing, as discussed in actual examples in the fields of auto parts production control, telecontrol, and data entry. Our comprehensive map data control system has proven its utility in the overall on-map management of facility data in the control of facilities within the Chiba Works compound.

As examples of system-level image processing using image processing technology developed at the Kawasaki Steel Technical Research Laboratories for problem solving in general industrial applications, articles in this issue describe the morphological analysis of iron powder and the automatic measurement of brake shoe wear on moving railway cars. In these examples we developed the hardware, software, and algorithms to the stage of practical use on the basis of the user's specific needs, and look forward to the use of this system in an expanding range of applications.

The spread of networks is also creating new needs, including internetworking devices for easy linkage between networks, optical disk equipment capable of handling enormous accumulations of data and so forth. Kawasaki's activities in those areas are discussed.

Because applications for advanced instrumentation technology in steel production and inspection processes are becoming increasingly sophisticated, we have developed systems which provide precise instrumentation information at an even higher level of accuracy. The examples presented here include our latest application technologies in the field of ultrasonic flaw detection, which is a key part of quality assurance, and temperature measurement, which is essential

in a number of production processes.

The examples of system products discussed in this issue were first developed with the comprehensive guidance and cooperation of our clients, who advised us of the problems which they faced. I would therefore like to conclude this introduction by expressing my sincere thanks to all those who have given us their support, and by asking each of them for continuing assistance.