

# FOREWORD

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Kawasaki Steel had completed the construction of the main facilities at its pipemaking mills by 1978, and subsequently upgrades its heat treatment capabilities, coating lines, and other equipment. The company then set its sights on the development of premium grade products, particularly for the energy industry, and the strengthening of production systems.

Demand for steel pipe reached a peak in 1982, but after the collapse of oil prices, energy-related demand endured a long, cold winter before pipemaking operations drew fresh breath recently, supported by company-wide rationalization efforts and vigorous domestic demand. There has, however, been no change in the major factors controlling global conditions; in particular, the great political and economic changes of the world will be reflected in significant changes in direct demand.

In OCTG and line pipe, which are energy-related products, our challenge is to meet the need for higher-grade products and to satisfy increasingly rigorous test standards. Specifically, there is need for tubular products for oil and gas containing large amounts of highly corrosive compounds such as  $H_2S$  and  $CO_2$ , for high-strength, high-toughness products for deeper wells and low temperature environments, for joints with better sealability, and for heavy-wall sour-service products for high-pressure, high-volume oil and gas transportation.

Among other tubular products, special importance is now attached to the concept of long-term performance design in high-performance steels with high strength and low YR for construction and production machinery, and to stainless steels, which offer aesthetic design flexibility and good maintenance properties. The development of products to meet these new requirements and the establishment of stable manufacturing methods for such products are therefore necessary.

In responding to these needs, the pipemaking division of Kawasaki Steel follows three main guidelines:

1. Stronger Production System: Supply the product required by the customer within the specified delivery period and at a reasonable cost
2. Higher Value-added Products: Respond to customer needs by producing first-class, premium-grade products
3. Expanded Application of Steel: Expand the range of applications for steel pipe products

Development efforts directed toward progress in technology include a wide range of activities: equipment augmentation and improvement, new product development, development of automatic instruments, improvement of the production process from materials through the finished product, and response to new user requirements. Those of us in the pipemaking division of Kawasaki Steel are committed to development in all of these areas, and would like to report some of our results in this issue of Kawasaki Steel Technical Reports.

The last special issue on pipemaking and tubular products was Issue No. 19, which was pub-

lished in 1988. The current issue presents an outline of pipemaking production technology and the product quality assurance system at Kawasaki Steel, as well as articles on newly developed technology, new products, new equipment, and automatic instruments. We trust you will read it with interest and find the contents useful.