

FOREWORD



This special issue on tubular steel products describes the principal developments over the past several years in Kawasaki Steel's pipe production activities.

The 1981 plunge in crude oil prices marked a sharp change in the business environment for steel pipe makers. During this increasingly difficult period, KSC made strenuous efforts to consolidate its pipe production systems and improve product quality, while pressing ahead with the development of stainless steel pipe and other new, higher value-added products.

(1) Pipemaking Equipment: Except for hot extrusion mills, KSC's pipemaking operation was substantially complete in 1978. Since 1978, no new mills have been constructed, but capacity has been expanded and existing plants renovated for the production of value-added products. Specifically, the small-diameter seamless pipe mill was renovated, heat treatment facilities such as the quench and temper line were expanded, and premium joint production units, including NC threading machines, were upgraded. Quality assurance was also enhanced with the development of a rotary MLFT (Magnetic Leakage Flux Tester) and other QA equipment.

This facilities improvement program gave Chita Works an annual pipe production capacity of 1.9 million tons, among the world's largest. In addition, KSC operates a UOE pipe mill at Chiba Works, where quality assurance is part of a comprehensive production control system.

(2) Pipemaking Technology: A great number of operational improvements have been achieved, centering on energy conservation, manpower reduction, and improvement of productivity and product yield. A fully automatic control technique for the medium-diameter seamless pipe mill was developed, as was an on-line automatic control system for the small-diameter seamless steel pipe mill. These technical innovations formed the basis for a more advanced stainless steel pipe production technology. Another important step was the development of a mandrel mill pass-schedule design system (MAP), which has brought about remarkable improvement in the dimensional accuracy of small-diameter seamless pipe.

(3) Product Grades: New products worthy of special mention includes such seamless stainless steel pipe as 13% Cr OCTG, 22% Cr line pipe, and 18% Cr-8% Ni pipe; welded 12% Cr steel pipe for automotive exhaust systems; and low-temperature, high-strength, high-toughness UOE line pipe. Higher grades of conventional steel pipe developed in recent years include grade KO-110S, with resistance superior to SSC; grade X80, a high-hardness, high-toughness ERW pipe; and light- and heavy-wall seamless pipe. Production technology for composite pipe of one or more steel types has been introduced. The premium joint FOX was also developed and has won wide acceptance.

Continuing technical innovation and process refinement have helped KSC maintain its position among the world's leading pipemakers. With the business environment likely to remain difficult and customer requirements becoming increasingly sophisticated and diverse, even greater efforts will be required in the future.

This special issue describes a small portion of KSC's achievements over the past decade. We trust it will prove interesting and informative.

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