

FOREWORD

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Kawasaki Steel Corporation, through its CI (corporate identity) campaign, has now established a new guiding corporate principle: to pursue an original multiple-business system with steel as its base. This represents a shift from the steel-focused corporate orientation which KSC has long maintained. The purpose of the CI campaign is to instill the employees of the company with a renewed goal-oriented sense of entrepreneurship.

KSC and its affiliated companies hope to create new business frontiers with the following three pillars: to consolidate steel operations as the core business, to diversify the technological capabilities fostered by steel technology into related businesses, and to transcend the current range of business activities and launch into non-steel areas of business. Required in the process of achieving these goals are civil engineering and architectural technologies, which constitute one important part of Kawasaki Steel's technological expertise.

1 In Japan, about 63 million tons of steel is consumed every year. Approximately half of this total, or 31 million tons, goes into civil engineering and architectural construction projects. KSC began to accumulate technologies for these projects as early as 1951. At that time the technologies available were limited to building and repairs, but it was in that year that we embarked on the construction of our first integrated steelworks at Chiba.

In preparation for this undertaking, we first reclaimed land from the sea, dredged sea channels, and built sea walls and jetties. We then constructed power plants, the first of six blast furnaces, open hearth furnaces, and in time basic oxygen furnaces and other facilities. Then followed the construction of roughing mills, hot and cold strip mills, and plate mills, as well as plating lines and other production facilities. Chiba Works pioneered in supplying Japan with the steel it needed as it raced ahead at a high rate of growth, and in the 38 years since construction began KSC has continued to build modern steel mills, including a second integrated works at Mizushima and the West Plant at Chiba Works. We have also established production facilities overseas, among them Philippine Sinter Corporation and the Tubarão Works in Brazil.

In civil engineering and architectural construction, measures against natural forces such as earthquakes, typhoons, and rainfall are basic technology, however, especially required in steelworks projects are technologies to meet severe conditions, including very heavy loads, great frequency of use, and exposure to high-temperature environments. In addition to "hard" skills, these enormous undertakings require skill in project management, i.e., the completion of a project within a short period, within the required schedule of each facet of construction for facility operation, and with minimum advance investment. All these requirements can be satisfied by the technologies we accumulated through the construction of steel mills. From the perspec-

* Appointed July 3rd, 1989

tive of business management, these technologies have the ancillary role of supporting steel production, but what the leaders of the engineering staff who participated in the actual construction of the facilities frequently said that to be a real engineer, one must take a broad view of the real world. Without becoming completely lost in day-to-day work, engineers must keep close watch on the advances being made in the world of technology. As I remember, we were often encouraged to contribute innovative ideas to the design and construction of subsequent projects, and were asked what points were unique or improved in comparison with former developments.

Around 1965, as steel production began to increase, efforts to develop steel-made construction materials were stepped up, and KSC set out on a drive to expand the sales of steel materials. Taking the customers' viewpoint, we produced steels featuring ease of installation as well as dependable quality, outstanding material properties, and dimensional uniformity and accuracy, and by offering them in quantity. These efforts opened the way to new applications for civil engineering and architectural construction technologies.

With the inauguration of the Engineering Center in 1973 and the establishment of the Engineering Division in 1976, KSC's engineering business got off to a strong start, charting a new course in transforming the technologies accumulated through the construction of KSC's own facilities and the steel construction materials originally used mainly by KSC itself into a salable comprehensive engineering technology. In the process, KSC recognized that customer-oriented presentation methods were also crucial to the marketing of engineering products and technology.

All this can be summarized as the integration of marketing and technology, and makes today's KSC engineering what it is, a technology-based service which is oriented towards the needs of customers. The understanding that engineering is a service allows KSC's business and engineering staffs to work in unison to achieve the ultimate goal of the project at hand. It is a basic rule of business to keep the client interested in one's products and services, but it takes more than a few capabilities to satisfy his needs: it takes comprehensive expertise, consisting of outstanding abilities to plan, design, and offer the specific functions best suited to client needs, to offer economy, and to provide a conducive environment. These abilities, needless to say, must be of a level to win acceptance from unbiased third parties in a highly competitive field of business.

As one role of the Civil Engineering and Construction Division, marketable customer-oriented technology should be developed to make the division one of the profit-making pillar of the company under KSC's new corporate philosophy, so this special issue is indeed a timely publication for introducing KSC's competence in this field to readers.

This special issue is a compilation of the recent achievements of Kawasaki Steel and Kawasaki group member companies in the field of civil engineering and architectural construction technologies, and I hope that our customers and other readers will find it informative and useful.