

Remarks on Special Issue on Welding Technology



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Welding technology is one of the most important technologies that support the manufacturing industries of Japan – a leading nation established on the basis of “manufacturing”. It is no exaggeration to say that welding technology is applied to many of the processes for steel and other materials used for such industrial products as buildings, bridges, ships, automobiles, rolling stock, pressurized vessels, pipelines, household appliances, beverage cans and electronic devices.

Almost all welding techniques, including arc welding, resistance welding, laser welding and friction stir welding that has now entered the limelight, were invented in the United States and Europe. On the other hand, Japan, which was quick to introduce those techniques, has developed welding power supplies, welding wires, sensor technology, welding robots, computer control technology and other related technologies in rapid succession and incorporated them in integrated production systems. Today our country is a world leader not only in the field of welding automation, but also in the development of steel products with superior welding properties and research into structural reliability engineering. All this accounts in large measure for the high efficiency and reliability of the manufacturing industries in Japan.

Nippon Steel Corporation, too, has continually developed new welding techniques and made various proposals so that customers using its steel and other materials can efficiently manufacture reliable products.

Welding a new type of steel product to satisfy new demands and needs from customers may call for a new type of welding material. In order to enhance both production efficiency and welded joint reliability at the same time, it is necessary to improve the welding method as well. Moreover, when it comes to using new types of steel products, welding solution technology based on a thorough understanding of basic welding phenomena is useful. Nippon Steel, in concert with its customers, has continually developed new and advanced welding technologies.

This Special Issue on Welding Technology focuses on some of the latest developed welding technology in Nippon Steel. In addition to development examples in the fields of shipbuilding, car manufacturing and architecture, it describes the results of several basic studies into the hardness of the heat-affected zone, the patterns of solidification, and so on. Fourteen technical papers and nine items of technical data have been included in this report, to introduce as many examples as the limited space permits.

Welding technology is all about achieving the fusion of three elements – the material, the welding method and the final product performance – with high levels of efficiency and reliability. In cooperation with its customers, Nippon Steel will continue to make all-out effort to offer valuable products and practical solutions through systematic research and development. We will be delighted if this Special Issue prompts our customers and business associates to provide us with more feedback than ever before.

I wish to express my heartfelt thanks to all concerned for their continuing cooperation.