

Development of Ultra-Narrow Gap Submerged Arc Welding Process for 2¹/₄Cr-1Mo Steel

Abstract

Improving the efficiency of the welding process is essential for the manufacture of large steel structures. Ultra-narrow gap submerged arc welding, performed with a nearly 0 °groove angle from the first to the last layer in a single pass, is a process that can be expected to significantly improve welding efficiency. Compared to conventional narrow gap welding, however, ultra-narrow gap welding is seldom seen in practical application because of its tendency to cause weld defects such as lack of fusion and slag inclusion. Hitachi Zosen, therefore, decided to develop an ultra-narrow gap welding technique that does not cause such weld defects.