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Formation of Arc Anode Spot as Function of Rotate Magnetic Field and Moving Speed of Welding Torch. YOSHIYUKI ZAMA, YOSHIFUMI MAEDA, TORU IWAO, Tokyo City University — Tungsten inert gas arc welding has useful joining technology because of high-energy and high-current characteristics. However, the welding speed should be slow because of the electrode erosion. If the moving speed of torch increased, the arc stagnates at the anode spot, and the restrike occurs. In this case, the weld defect occurs. Thus, the arc deflection should be prevented with applying the rotate magnetic field. In this research, the formation of arc anode spot as function of the rotate magnetic field and moving speed of welding torch is elucidated. That magnetic flux density and moving speed of the torch were varied from 0 to 3 mT and 300 to 3,000 mm/min, respectively. The axial plasma gas argon flow rate was varied from 5 to 8 slm. A rotate magnetic field is applied to the arc using Helmholtz coil and Solenoid Coil. The anode is used by a SUS 304. As a result, the arc anode spot increases with increasing the moving speed of welding torch. Thus, it became difficult to form the arc anode spot, and stagnation hardly occurred as function of rotate magnetic field. Therefore, the welding speed can improve.

Yoshiyuki Zama
Tokyo City University

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