

Abstract Submitted
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Arc Deflection Length Affected by Transverse Rotating Magnetic Field with Lateral Gas TORU SHIINO, YOKO ISHII, SHINJI YAMAMOTO, TORU IWAO, Tokyo City University, HIGH CURRENT ENERGY LABORATORY (HICEL) TEAM — Gas metal arc welding using shielding gas is often used in the welding industry. However, the arc deflection affected by lateral gas is problem because of inappropriate heat transfer. Shielding gas is used in order to prevent the instability affected by the arc deflection. However, the shielding gas causes turbulence, then blowhole of weld defect occurs because the arc affected by the instability is contaminated by the air. Thus, the magnetic field is applied to the arc in order to stabilize the arc using low amount of shielding gas. The method of applying the transverse rotating magnetic field (RMF) to the arc is one of the methods to prevent the arc instability. The RMF drives the arc because of electromagnetic force. The driven arc is considered to be prevented to arc deflection of lateral gas because the arc is restrained by the magnetic field because of the driven arc. In addition, it is assume the RMF prevented to the arc deflection of lateral gas from the multiple directions. In this paper, the arc deflection length affected by the RMF with lateral gas was elucidated in order to know the effect of the RMF for arc stabilization. Specifically, the arc deflection length affected by the magnetic frequency and the magnetic flux density is measured by high speed video camera. As a result, the arc deflection length decreases with increasing magnetic frequency, and the arc deflection length increases with increasing the magnetic flux density.

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