

Abstract Submitted  
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**Arc Rotation Radius and Driven Force Affected by Frequency of Transverse Rotating Magnetic Field** KOKI MATSUMOTO, TORU SHIINO, YOSHIFUMI MAEDA, REGGIE GUSTILO, KENJI SUZUKI, TORU IWAO, Tokyo City University — TIG arc welding is used in the case of joining two metals deflection When the lateral gas blew the arc, an inappropriate heat transfer occurs because of the arc deflection. A proposed method of applying transverse magnetic field, in order to prevent the arc deflection, has been considered. One direction of transverse magnetic field only prevents the arc deflection to the lateraled gas direction which is affected by lateral gas. Thus, the control is difficult to achieve one direction affected by transverse magnetic field. When a rotating transverse magnetic field is applied to the arc, the Lorentz force can be applied in any direction. The arc is restrained by this force and it can prevent the arc from deflecting. In this paper, the arc rotation radius and the driven force affected by frequency of transverse rotating magnetic field in atmospheric pressure arc were analyzed. Specifically, the arc rotation radius affected by the magnetic frequency and the magnetic flux density are measured by two high speed video cameras. As a result, the arc rotation radius and the driven force decreases with increasing the frequency of transverse rotating magnetic field.

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