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Frequency of Splitting and Moving Direction of Cathode Spot Affected by Transverse Magnetic Field in Vacuum arc. YURIKO TAKEDA, SOSHI IWATA, YOSHIFUMI MAEDA, REGGIE GUSTILO, KENJI SUZUKI, TORU IWAO, Tokyo City University — The vacuum arc cathode spot can be applied as pre-treatment of thermal spray because it can remove oxide layer on the metal surface. However, the removal of oxide layer is not enough and re-melting occurs because the cathode spot moves with random manner on the metal surface. Therefore, it is necessary to control the moving direction of the cathode spot. The method of applying a lateral external magnetic field to the arc has been considered in order to control the moving direction of this cathode spot. However, when multiple cathode spots exist, it is considered that the moving direction changes due to the electromagnetic force caused by magnetic field derived from electrodes current. In this paper, the frequency of splitting and moving direction of the cathode spot affected by the transverse magnetic field in vacuum arc is elucidated. While focusing on magnetic flux density, and the respective splitting frequencies and moving directions were calculated. As a result, the splitting frequency is decreased with increasing magnetic flux density, and the movement in a straight line is improved.

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