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Removal of Oxide Layer Using Vacuum Arc Cathode Spot with Transverse External Magnetic Field SHIKO KANEDA, ARISA TAKAHASHI, SHINJI YMAMOTO, TORU IWAO, Tokyo City University, Setagaya, Tokyo 158-8557, Japan — A remarkable characteristic of a cathode spot in a vacuum arc is that the cathode spot moves around the metal at high speed. Cathode spots of vacuum arc have been used for cleaning metal oxide surface. In addition, the adhesion strength increases in the case of thermal spraying because the roughness on the metal surface is formed. However, the removal of oxide layer is not enough and the re-melting occurs because a cathode spot moves with random manner on the metal surface. In this paper, the removal of oxide layer was observed in order to control the cathode spot movement with transverse external magnetic field. Experiment were performed using a SS400 cathode work piece. A high-speed video camera recorded the cathode spot. Then, the obtained images were analyzed by plasma image processing. As a results, the cathode spot moves with retrograde motion under removing the oxide layer when a magnetic field was applied. Then, the moving speed of cathode spot increases with increasing the magnetic field.

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