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Radiation Power Affected by Current and Wall Radius in Water Cooled Vortex Wall-stabilized Arc TORU IWAO, TAKAYA NAKAMURA, KENTARO YANAGI, SHINJI YAMAMOTO, Tokyo City University — The arc lighting to obtain the environment to evacuate, save the life, keep the safety and be comfortable are focus on. The lack of radiation intensity and color rendering is problem because of inappropriate energy balance. Some researchers have researched the arc lamp mixed with metal vapor for improvement of color rendering spectrum. The metal vapor can emit the high intense radiation. In addition, the radiation is derived from the high temperature medium. Because the arc temperature can be controlled by current and arc radius, the radiation can be controlled by the current and arc radius. This research elucidates the radiation power affected by the current and wall radius in wall-stabilized arc of water-cooled vortex type. As a result, the radiation power increases with increasing the square of current / square of wall radius because of the temperature distribution which is derived from the current density at the simulation.

Toru Iwao
Tokyo City University

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